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DISABILITIES OF THE SHOULDER GIRDLE.*

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The subject I wish to bring to your attention is one of practical importance, and represents a problem for solution very frequent in ordinary medical practice. The shoulder girdle, which includes the shoulder joint and its contiguous anatomical structures, is very much exposed to trauma in one's daily activities and consequently is not only subject to disability through such trauma alone, but also to disease.

The shoulder girdle proper is an incomplete bony ring formed by the clavicle in front and the scapula behind. The shoulder is a ball-and-socket joint formed by the globular head of the humerus resting in the shallow glenoid cavity of the scapula. This arrangement permits great latitude of motion and displacement is limited by the several ligaments, the muscular attachments and atmospheric pressure. When the ligaments alone remain the joint surfaces can be easily separated. The joint is further protected by the coracoid and acromion process of the scapula.

The ligaments stabilizing the joint are few but of considerable strength. The principal ones being muscular, the coracohumeral, the transverse humeral and the klenoid ligaments. It should be remembered that these ligaments are composed of nonelastic tissue and are not intended to take part in the motion of the joint but to limit this motion or assist in preventing dislocation in case of undue relaxation of the muscular structures. The nerve supply of this joint is chiefly derived from the circumflex and suprascapular branches.

When these free movements of the arm just referred to are arrested in the shoulder joint by the contact of the bony surfaces and by the tension of the corresponding fibres of the capsule, together with that of the muscles acting as accessory ligaments, they can be carried considerably further by the movements of the scapula, including of course, motion at the acromioclavicular and sterno-clavicular joints. The extent of these movements of the scapula is considerable especially upon abduction and extreme elevation of the arm. Cathcart has pointed out that in abducting the arm and raising it above the head, the scapula rotates throughout the whole movement with the exception of a short space at the beginning and at the end. I emphasize this relative motion of the scapula at this time as I wish to refer to it later in taking up the treatment of shoulder joint lesions.

One cannot review the anatomy of this joint without reminding you that because of its construction and freedom of movement, the shoulder is more frequently dislocated than any other joint in the body. The dislocation is primarily subglenoid but generally assumes some other position which varies according to the direction and amount of force and the strength of the muscles before and behind the joint. The most frequent position the head generally

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assumes ultimately is subcoracoid. Such dislocations are generally reduced without great difficulty and if put up in the proper position and given adequate after-treatment no permanent disability remains.

In making an examination to determine shoulder pathology, too much stress cannot be laid upon ordinary inspection. The patient should have both shoulder joints exposed and the arms free of clothing to permit passive and active motion in all directions. The usual signs of active inflammation should first be looked for; next any evidence of deformity as compared with the opposite joint, including the position of the shoulder as to drooping or elevation. Definite points of tenderness are then searched for, especially the clavicle, the coraco-humeral articulations, the subglenoid, bursa and the scapula. An extremely important factor to be noted is atrophy, especially of the upper arm, but sometimes including the entire extremity. This is an unfailing sign of disuse and evidence of real disability, hence its importance in compensation and medico-legal cases. It is a sign with which malingerers are not familiar and which they cannot simulate. Swelling and effusion of the joint should be looked for. If a synovitis exists the capsule is evenly distended and the contour of the joint rounded. The effusion into the synovial membrane can be best ascertained by examination from the axilla, where a soft, elastic, fluctuating swelling can usually be felt. Special projecting may occur at the site of the openings in the capsular ligament; that is, a swelling which is bi-lobed may be seen in the interval between the deltoid and the pectoralis major muscles, from effusion into the diverticulum, which runs down the bicipital groove with the tendon of the biceps. The degree of active motion can of course be determined by asking the patient to go through whatever motions he can, the examiner noting the limits of motion, the flatness or activity of the deltoid and the motion of the scapula. The patient is then requested to relax, then the examiner passively determines the limit of joint motions and whether the scapula remains fixed in the beginning and at the end of the abduction of the arm or whether it moves with the humerus throughout the execution of abduction. If the latter condition exists analysis of the joint, either fibrous or bony, has taken place.

If pain is produced upon motion it is important to note the site of such pain and if it is referred along the circumflex to the deltoid. If evidences of chronic inflammation exist such as discharging sinuses, etc., one must differentiate between chronic osteomyelitis and tuberculosis.

In this age of advanced diagnostic methods one cannot feel that every effort toward final solution of a medical problem has been accomplished until a radiograph of the affected part has been made. This is especially true in bone and joint cases. It is commonly considered by medical men that an X-ray of a part is a matter demanding little thought and is generally left to the judgment of the radiologist who does not see the patient clinically, or to a technician. The pose of the part to be radiographed is seldom given any consideration. In X-raying the shoulder it is most important to pose the part in adduction with the head of the humerus rotated internally and again with the arm abduction to 90 degrees and the humerus rotated externally. This gives a view of nearly the entire head of the bone and often by the change of the position reveals a calcified bursa, the shadow of which otherwise would have remained obscured by the head of the humerus. This is true of other conditions.

It is a fact too often brought to my attention that the interpretation of X-ray films is also left to assistants or untrained technicians or to radiologists who do not see the patient clinically. The patient's physician should be familiar with the pathology seen in radiographs and knowing the clinical aspects of his case can more often correctly interpret the films than the radiologist. A careful study of such films,

instead of a casual glance, or dependence upon another's opinion, should by all means be the usual procedure.

It is not the purpose of this paper, nor is it possible, to go into every condition producing disability of the shoulder joint and the shoulder girdle but to bring to your attention for discussion a few of the more common disturbances and their treatment.

In reviewing the anatomy of the shoulder you were reminded that it is the most frequently dislocated joint. The lesion occurs most frequently in middle age, and in men. Direct trauma is responsible for the majority of the cases. In nearly every case the condition is promptly recognized by the changed outline of the shoulder and the flattening of the infraclavicular fossa. The fixation of the arm in a semi-abducted position is fairly typical. In a recent review of 120 cases by Karl Schlaepfer, published in the American Journal of Medical Sciences, 94 per cent were anterior disclocations and 6 per cent posterior. Of the anterior cases 90 per cent were subcoracoid which, as I have mentioned before, is the commonest type of shoulder dislocation. X-ray examination to determine accurately the position of the head is essential and should be a routine procedure. The method of choice for reduction is that devised by Kocher, with which you are all familiar, or some modification of same, preferably used with general anesthesia. Early motion of the joint is imperative as a means for preventing ankylosis, and thus restoring function. The most frequent complications incident to this injury are, trauma to the circumflex and muscle-spiral nerves and fracture of the greater tuberosity or surgical neck of the humerus.

In regard to the abcve fractures, the diagnosis and treatment hase become more or less standardized, the former by X-ray and the latter accomplished with the arm in abquesion, whether in an ambulatory splint or with the patient recumbent; it being possible to exert extension in either case. Too much emphasis cannot be laid on early motion in cases of fracture, as has already been advocated in dislocations. It is far too common an error for a fracture to be splinted and left so almost indefinitely, no thought being given to the adjacent joints; forgetting also that the cohesive properties of callus are fully established within 10 days to 2 weeks, permitting careful passive motion at the end of that time. The principle of abduction in cases of upper arm fractures is well known by most of you, chiefly to bring about alignment of the shaft with the abducted humeral head, brought about by the pull of the deltoid and allied muscles. It is frequently the case that such fractures, in fact the favorite position for all arm injuries, are treated by the thoughtless and unitiated in close adduction to the chest wall. You readily see how this produces faulty alignment in upper arm fractures and promotes contraction of the pectoral tendons in all cases irrespective of the type of injury or the nature of the disease. The relief of such fractures presents a problem in itself which is by no means always simple and often requires much patience and produces increased pain for the patient, to say nothing of the increased time required for convalescence and added expense. The proper position of abduction not only avoids these complications but relieves the deltoid of over strain which at times results in partial paralysis and delayed recovery.

I have referred briefly to the more serious of complicated shoulder injuries which may or may not be associated with involvement of the nerve supply of the shoulder girdle. By far the most common form of traumatic paralysis is that of the circumflex and musculo-spiral nerves. The typical flat shoulder and upper arm, with the absence of power to abduct the arm indicates the involvement of the former nerve; while the well known wrist drop reveals involvement of the latter. These palsies are more correctly pseudo-paralyses as they generally completely recover if the extremity is put at rest in the proper attitude; that is, abduction of the arm for

the circumflex and full dorsal flexion of the wrist for the muscolo-spiral—and careful faradic and galvanic stimulation is given. Heat and massage associated with muscle education are indispensable.

Nearly all the joints of the extremities are subject to ligamentous strain to a considerable extent. This is less true however concerning the shoulder than the majority of our joints. The most common typical strain affecting the shoulder ligaments is that involving the coraco-humeral ligament. When strained it is so intimately connected and attached to the capsular ligament that quite marked relaxation of the capsule occurs. A slight prominence of so-called subluxation of the humeral head forward is seen and tenderness occurs over this ligament on the front of the joint. The condition is generally seen when chronic and reveals no redness and but slight tenderness. Joint motions are normal but forward flexion with force, such as is performed in throwing a ball or playing tennis, produces pain and feeling of weakness. The condition resolves itself if rest is insisted upon and carefully directed resistive exercises are given to develop the supporting or protective muscular structures.

Probably the largest group of shoulder disabilities seen in general practice are so-called medical or non-surgical cases. Of this group the arthritides take precedence from the standpoint of frequency of occurence and in the number of cases. To discuss arthritides completely a monograph upon that subject should be presented. Consequently only a brief mention of the common types to be seen can be presented here. A reasonable, working classification of arthritis is as follows:

(a) Acute types (1) acute infectious arthritis, as examples—gonorrheal arthritis, streptococcus from tonsils, teeth, etc. (2) Acute rheumatic arthritis of undetermined origin.

(b) Chronic types (1) the well known hypertrophic arthritis, common in middle and advanced age and rare in the young. (2) Atrophic arthritis or arthritis deformans (3) tubercular arthritis and (4) malignant disease of the large bones involving the adjacent joints (5) leutic arthritis or charcot disease. These various types present characteristics symptoms indicative of each, a description of which cannot be gone into at this time because of a lack of time. The X-ray evidence also is characteristic and is of course necessary to differentiate in many instances. The various types attack the shoulder joint almost as frequently as the other large joints and require the same care. The treatment of the arthritides will be alluded to in the general treatment of shoulder disabilities.

I have purposely deferred until now reference to a most interesting group of shoulder disabilities, which in my opinion fall quite naturally into the non-surgical or medical classification only recently referred to. I have reference to periarthritic conditions, the chief of which are (1) bursitis (2) leutic periositis and and myositis (3) adhesions, resulting from either of the foregoing conditions or from trauma.

Bursitis of the shouder is referred to frequently in the literature. It is still a question open for discussion as to whether the inflammatory lesion involves the hubdeltoid or the subacromical bursa. In any event the pain is located over the front of the shoulder joint, anterior to the tip of the shoulder and near the origin of the deltoid and the insertion of the supra-spinatus tendon. The history may or may not indicate a trauma. The onset is generally sudden and the pain intense; any effort at motion in any direction producing great pain, consequently the characteristic attitude of the patient is with the affected arm held closely to the side of the chest, the slightest movement of the arm being studiously avoided. There is generally some swelling of the area surrounding the point of greatest tenderness but no redness is to be seen. The arm, if carefully and fully supported, can be moved passively in

all directions demonstrating that there is no lesion in the articulation itself. X-ray examination, with the arm in adduction and then abduction, very frequently demonstrates a calcified mass varying in size from that of a small pea to one several inches long. It is again a question for debate as to whether this calcification has taken place in the bursa or whether it is in or upon the supraspinatus tendon at its insertion in the greater tuberosity of the humerus. Stern of Cleveland in Surgery, Gynecology and Obstetrics, January 1925, reports 3 cases of subdeltoid bursitis revealing, by X-ray before operation, an area of calcification. Operation, however, revealed "a small oblong, encapsulated, soft but fine, nonfluctuating tumor in or upon the supraspinatus tendon. The contents of the tumor were granular noncrystaline, non-oily, non-fluid, brownish-gray in color and absolutely not hard or bony. The laboratory reports in all three called the substance amorphous fat. It dissolved completely in ether and all chemical tests for calcium were negative." The size and shape of these reported cases and the cases to be shown you tonight, tend to prove further that the shadow casting tumors follows the course of the supra-spinatus tendon and do not necesarily conform to the shape of the subdeltoid bursa. The suddenness of their appearance and rapidity with which they disappear under proper conservative treatment leads one to accept very readily the laboratory report of a fatty deposit rather than one of calcium. The condition is exceedingly disabling but fortunately responds fairly quickly and permanently to treatment, reference to which will follow.

True periarthritis of the shoulder is not unusual but is seldom recognized. The onset may be suddent or insidious, generally the latter. When sudden the pain is often very acute and the patient carefully guards the slightest movement of the arm and shoulder. It is a striking fact, however, that even though the motions of the shoulder joint are done with great caution, it is found that with the arm fully extended and hanging at the side of the body rotation of the humeral head can be executed without pain. Efforts at abduction, extension and flexion of the shoulder produce intense pain and the patient anxiously prevents same. In this stage the pain is quite readily relieved by heat, without massage, and the administration of the salicylates. When the onset is insidious, which is the usual manner of occurrence, inspection of the shoulder region reveals nothing abnormal of note. No swelling or redness is to be soon. Palpation reveals no tenderness, except at times along the distribution of the superficial nerve branches. The patient complains of stiffness of the shoulder and it is found that all motions of the joint are quite markedly restricted in all directions, both actively and passively. Abduction and extension are particularly limited and any efforts at forcible correction of this limited motion produce greatly increased pain. With the arm in relaxation it can be readily determined that the scapula moves only during a part of the excursion of the arm and not in either the beginning or the end of same, thus ruling out involvement of the articular surfaces.

The causes of this condition are numerous. If often occurs following infections of various types, but particularly influenza and colds. The focal infections account for many cases and lues, producing a periostitis as well as a periarthritis, is found in a great many cases. Trauma involving the shoulder and its adjacent structures, especially these cases in which hemorrhage occurs, produces fibrous adhesions throughout the muscular, ligamentous and capsular structures around the shoulder. Often when injury occurs to more than one joint, the patient does not realize the restricted motion of the shoulder until weeks after and only when attempts are being made to mobilize the more severely injured joint is the periarthritis discovered. This condition recently occurred in connection with an old fracture of the elbow. The patient was not aware of any pathology in the

shoulder until efforts were made to mobilize the injured elbow. The treatment of shoulder disabilities in general divides itself quite naturally into several classifications. (1) Postural or the position of relaxation, the neutral position (2) medical (3) surgical and (4) treatment by physiotherapy.

The postural treatment of a sick or injured shoulder is generally a secondary one in the hands of most of us, whereas it should constitute our first thought. The position of abduction of the shoulder, to from 45 to 70 degrees, places all the muscles in complete relaxation and prevents contractures of the adductors. It also relieves the abductors of over strain, thereby avoiding marked weakness or the psuedo-paralyses which sometime occur from prolonged over-stretching; at the same time this position is the most favorable in case of bony or fibrous ankylosis, which is a possibility in all cases of inflammation. If ankylosis should occur the resulting handicap will be slight, for with the humerus ankylosis to the scapula at 50 degrees it permits full adduction and abduction, and extension to ¾ of normal because of the rotation of the scapula on the posterior chest wall. If ankylosis occurred with the arm parallel to the chest wall abduction would be limited to about ¼ normal and extension of the arm would be impossible. This position is best maintained by the use of the standard army abduction splint, the aeroplane splint, or a carefully applied plaster of Paris splint including the thorax and the arm in the desired position. This position often gives immediate relief of pain the shoulder girdle is accessible for any other necessary treatment without changing the position of the arm.

If it is found impractical or impossible to obtain the necessary abduction splint a sling fashioned, so as to take the weight of the arm off of the shoulder girdle can easily be arranged. This is accomplished by using a very large sling and after adjusting it in the ordinary way, pin it closely around the wrist to retain its position. The point of the sling behind the elbow is then brought up over the back of the arm and securely and tauntly pinned to the portion of the sling passing over the back of the neck at the point where it crosses the clavicle. This then lifts the humerus upward and relieves the capsule and muscles of any downward pull.

When referring to the medical treatment of these disabilities I mean to indicate the clearing up of all foci of infection which have been found, especially frank pathology in the teeth, throat or sinuses. If other chronic foci exist, such as the gall bladder and appendix, proper steps should be taken to relieve the absorption from them. The intestinal tract which is such a frequent offender is constantly overlooked but should to the contrary, be carefully cleansed and forever watched. The laboratory and clinical examination for lues should be done. If the former is negative do not immediately exclude syphilis, for the majority of bone and joint cases of lues give a negative Wasserman. The X-ray should be studied very carefully after obtaining a film, the detail of which is clear, and any evidences of periostitis, arthritic changes and malignancy should be watched for. The administration of the salicylates and iodides is almost specific for the acute types and ordinary mixed treatment in the cases which respond slowly to recognized treatment, is never amiss. Thorough elimination through the intestines and the intake of large quantities of fluid is extremely helpful. All efforts to increase the alkaline content of the blood in the form of alkaline drinks (citrates, citro-carbonate, etc.) is especially valuable in those conditions following or occurring with colds and influenza. It is often necessary to give opiates and other sedatives in the beginning of the acute stages until the correct diagnoses is made and the condition brought under control.

Except in the cases of dislocation of the shoulder and fractures of the humerus and clavicle, the surgical treatment of shoulder

disabilities plays a very small part. The treatment of these two conditions has now been standardized to a large extent and after the proper reduction then becomes a medical problem and requires the position of abduction carried out as described above. It is seldom necessary in my opinion and experience to cut down on a calcified bursa or allied condition involving the shoulder as they respond promptly to the methods herein outlined. In the past, however, the incision and exposure of the cases of so-called calcified bursitis with a careful description of the pathology found and laboratory examination of the contents, as carried out by Stern, has furnished valuable data in proving the character of lesion with which we are dealing, making us more sure of the satisfactory results to be obtained by rest, heat and properly directed the satisfactory results to be obtained by rest, heat and properly directed massage. In the extreme cases of periarthritis with marked fibrosis careful but thorough manipulation of the joint under ether is often necessary, after which a short period of fixation in extreme abduction or preferably full extension of the arm above the head relieves the condition, when then again it becomes a purely medical problem.

Probably the most important and useful form of treatment of all the classes of cases under discussion is that which has become known as Physiotherapy. I regret to say that the interpretation of this department of medicine, is in many instances, incorrect and full recognition of its real value not realized. Since the war impetus has been given to the work and many improperly trained workers have been allowed too much latitude in carrying out its detail. It is a mistaken idea that anyone who has received no special training or at most a few weeks of observation of physiotherapy technique can successfully relieve cases by its use. A trained worker from one of the recognized schools of physical education is the first essential for the successful use of the various modalities and methods of treatment used in a physiotherapy department. I can imagine no more harmful thing than to turn a patient with real pathology over to an untrained person for the application of heat, diathermia or massage in a haphazard, unintelligent way. It is almost a daily occurrence in my office to see patients who have failed to recover under such treatment but who respond rapidly to these methods when properly applied.

Massage is one of our most valuable adjuncts.It is essential, however, that it be given scientifically. It should be used primarily to promote circulation, thereby increasing elimination and safe guarding muscle tonus. In joint inflammation it should be given over the muscles between the joint but never over the joint itself. It should be begun very carefully and gently and seldom is deep massage, as used by osteopaths and others, necessary. As soon as joint pain and inflammation subsides sufficiently muscle training is indicated and should be followed out.

Massage is always best applied after some form of heat has been given to the affected parts. Such heat has an added value in its relief of pain. Especially is this true in the shoulder cases under discussion. This heat is most effective when applied as diathermia, which not only heats the superficial tissues but by the transmission of the current through the bone and deeper soft parts a complete engorgement of the entire structure can be attained. You no doubt are entirely familiar with the modern apparatus used for the development of this form of heat. Other methods of heat applications are valuable and are applied with ordinary bakers and more satisfactorily with deep therapy lamps.

After the above methods have begun to relieve pain careful joint motion is begun and it is only a short time when normal joint function is restored. In the series of cases treated in my experience in the past several years no recurrences have taken place.

CASE REPORTS.

1. Mr. W. V. K. White, male. About October 15, 1924, while riding in an automobile same turned over and the patient was pinned under it. A portion of the weight of this auto rested on the patient's left shoulder. He was taken to medical assistance and no fractures found. Since the accident he has noticed very marked weakness of the left arm and hand. He is unable to use the wrist at all and the shoulder to a very slight extent.

Upon examination November 28, 1924, no focal infection was found. No evidence of inflammation was seen and no evidence of fracture or dislocation made out. There was quite marked atrophy of the deltoid and supraspinatus. All joint motions, passively, were normal but patient had only slight active power of abduction of the arm and the hand presented a typical wrist drop; slight power of contraction in the deltoid and no power in the dorsal flexors of the wrist and fingers could be made out. These muscles failed to react except very weakly to faradic stimulation.

X-ray examination in adduction and abduction revealed no bone or joint pathology. A diagnosis of traumatic paralysis of the circumflex and musculo-spiral nerves was made. The weight of the arm was taken off the shoulder by means of a carefully adjusted sling and the hand supported on a plaster cock-up splint in full dorsal flexion. Heat, massage and muscle training was immediately begun. Improvement was very rapid and complete recovery took place in three weeks.

2. Foster H. Negro male.—August, 1924, while working in a ship's hold he was pulled up by a sling and his hips struck against a ledge of the deck, the patient then falling to the deck striking on his left shoulder. Patient was unconscious for 15 minutes. He was sent to the Charity Hospital where X-rays of skull and shoulder were made. A blood test was also made. He remained in the hospital one week. The patient was treated for some time by his family physician and another set of X-rays were made.

Upon examination January 29, 1925, 5 months after the injury, no focal infections were found. The patient presented himself with the left arm held dangling loosely to his side. When asked to disrobe, he did so with apparent difficulty, but observation revealed the fact that he would admit. There was no atrophy of the left arm or forearm. When it was insisted that he make some effort to use the affected arm it was found that he could abduct the arm to 50 degrees and rotation of the shoulder was normal. There was some atrophy of the supraspinatus muscle. It was found that all groups of muscles of the shoulder, arm and forearm reacted normally to the faradic current.

X-ray made at the time of examination and review of the films made some months previously, revealed no bone or joint pathology. This case undoubtedly represents a case of malingering. Despite 6 months of feigned inability to use the arm the patient presented no atrophy.

3. George S. White, male.—October 15, 1924, while standing on a ladder 20 feet from the ground, patient fell and injured the left elbow. A number of teeth were knocked out and the patient rendered unconscious. He was taken to the Charity Hospital where X-rays revealed a fracture of the radius at the elbow joint. Later the head of the radius was removed. The patient was sent to me by his physician because of limitation of motion of the elbow joint. No other disability was complained of.

Upon examination December, 1924, the patient presented a partial fibrous ankylosis of the elbow joint with marked induration of the soft parts. Great pain was produced upon any efforts at forced motion. The patient was not aware of any disability in connection with the shoulder and did not complain of same. Examination, however, revealed that abduction of the shoulder was limited to 90 degrees and external rotation slightly. There was no redness, swelling or tenderness of the joint or its adjacent structures. The patient was surprised to find that he had any involvement of the joint.

X-ray revealed slight evidence of a periostitis and atrophy of the acromion, the coracoid and the head of the humerus.

This shoulder involvement, in my opinion, reveals a traumatic periarthritis which was overlooked during the first weeks of the patient's disability. The condition has responded completely and rapidly to treatment and is now practically normal.

4. Mrs. S. S. G., white female.—In June, 1922, the patient attended a moving picture show and sat under a fan. The following day she had slight pain in her right shoulder, which was increased by use. The second day the pain became constant and very excruciating, the slightest movement being carefullly guarded by the patient. After several days of sedatives the pain became somewhat relieved and the patient was able to go out for dental and throat examination. No pathology was found in either. The patient then reported to me for opinion and treatment.

Upon examination, no swelling, redness or deformity was found but there was very marked tenderness over the head of the humerus at the

attachment of the supraspinatus tendon. All motion of the joint were apparently free but studiously avoided by the patient. X-ray revealed a calcified area at the site of the subdeltoid bursa. The film made with the arm abducted shows the bursa or mass overshadowed by the head of the humerus, illustrating the importance of an X-ray in at least two positions.

A sling was arranged to take the weight of the arm off the shoulder and salicylates were given. Baking and gentle massage were also begun. The patient was entirely relieved of pain within a few days and completely normal function was restored within 5 or 6 weeks.

Reports from the patient in the past few days indicate that she has never had the slightest return of trouble.

5. Mrs. L. S. White female "played golf several days ago for the first time in about one year. No bad results from same were noticed at the time, but since then she has been suffering more or less pain in the left shoulder joint, gradually increasing in intensity. The past 24 hours the pain has been intense. No sleep has been possible and the slightest motion is excruciating. The patient firmly holds the affected arm with the right hand and indicates great fear of it being moved."

Upon examination January 16, 1925, the patient was found closely guarding the arm and shoulder it was noted that there was very marked tenderness at the point of the shoulder; about the point of attachment of the supraspinatus tendon to the humerus. Palpation seemed to reveal a mass the size of a green pea at the point of tenderness.

X-ray examination was made and a small calcified mass at the point of the shoulder was found. A sling in the manner above described was arranged and the patient given heat with a strong deep therapy light; also very gentle massage. Patient obtained almost immediate relief and complete recovery took place within several weeks. This patient has been seen recently and no recurrence has taken place.

6. E. J. S., white male.—"For the past few months the patient has been going to a genito-urinary specialist for a chrinic prostatitis for which he has been receiving massage. Several days ago the left shoulder began to develop some pain. His genito-urinary physician gave some general instructions but no relief has been obtained. For the past 48 hours the pain has become so very acute that the patient has been unable to sleep and cannot use the left arm and shoulder."

Upon examination July 31, 1924, the patient was found to be holding the left arm carefully to the side of the body and it was impossible to get him to move the arm, either actively or passively, because of the pain. No redness, swelling or deformity was found but it was thought some fullness existed over the anterior aspect of the shoulder. There was marked tenderness at the site of the subacromial bursa.

X-ray was made and revealed a very large calcified mass, about 2 inches long, following the contour of the head of the humerus at the external condyle. A sling was applied to take the weight of the arm off of the shoulder and the patient was given deep therapy heat and sedatives. Very little relief was obtained from the above measures. He obtained relief, however, as long as heat was being applied. An abduction splint of the standard army type was then applied and the patient began to obtain immediate relief. With the use of this splint it was possible to obtain immediate relief. With the use of this splint it was possible to give the necessary physiotherapy without moving the arm, which is a great advantage in such cases. The patient's relief was complete and full function was restored in about 4 weeks. This patient has been seen recently and states that he has had no recurrence.

CONCLUSIONS:

1. Disabilities of the shoulder girdle are varied and demand more careful study than is usually given them.

2. X-ray examination of all cases is imperative and the exposure should be made with the humerus in abduction and adduction.

3. Fixation of the shoulder in abduction is generally indicated and is best accomplished with an abduction splint of the aeroplane type.

4. If ankylosis of the joint seems likely, the position of election is 45 degrees of abduction, thus taking advantage of the range of motion of the scapula.

5. Intelligently administered physiotherapy is of great value for the relief of pain and complete resolution of the lesion.

6. Operative surgery is seldom necessary except in frankly septic conditions in and around the shoulder joint.

THE X-RAY IN OSTEOMYELITIS.*

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There is no disease that requires closer co-operation between the physician and radiologist than osteomyelitis, and if we are

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to remove this disease from the chronic disabling class, it will be by the harmonious team-work of the physician, surgeon and radiologist each playing an important part in the patient's recovery.

The surgeons as a unit urge the early operation of these cases, because even in a short time there is a large amount of bone destruction and our operative measures may be too late.To emphasize in no uncertain terms the need of early operation the late Dr. John B. Murphy considered osteomyelitis in the same class with gangreous appendicitis insofar as the need for immediate operation was concerned.

If early operation is the proper procedure, and all authorities agree that it is, then the need for a complete understanding between the surgeon and radiologist is imperative.

To illustrate this point, suppose the case of a child with an inflammatory condition over one of the long bones, with or without a history of trauma, temperature, pain and high leucocyte count, and we have a case in which osteomyelitis is a possibility.

An X-ray examination is made and the resulting skiagraph is apparently negative. In the resulting report the greatest care should be exercised so as not to mislead the surgeon, and as the careful obstetrician exercises extreme care in his examination with the thought always in mind that this particular case may require a cesarian, so does the conscientious radiologist, keep in mind the possibilities of early osteomyelitis

Practically every text book, even those devoted to X-ray are of the opinion that the X-ray has no value in the early stages of osteomyelitis. This statement is somewhat misleading for the X-ray has a very important and definite role to play in osteomyelitis even in the earliest stage. It is certainly of value in the first ten days to exclude fracture and luxation, as well as bony pathology of other conditions. Excluding all of these there then remains osteomyelitis and acute arthritis, limiting the field of differential diagnosis to a point where final diagnosis becomes simplified.

Even in the early stages of osteomylitis when an active, acute and virulent infection exists one would think that the X-ray would show some changes demonstrable on a skiagraph, but we must remember speaking as a radiologist there are only two pathological changes of importance to us, bone production and bone destruction. Even with the haversian canals filled with pus the bone appears normal because there is no destruction of bone.

Osteomyelitis is defined in Dunglison's Medical Dictionary as a "Medullitis or inflammation of the narrow of bone, usually traumatic." It probably would have been better to define this condition as an inflammation of the bone and marrow. We know that the long bones consist of a narrow cavity, containing the blood and lymph vessels, the nerves and medullary fat. Surrounding the marrow cavity is a dense hard bone called the cortex, this in turn is covered by periosteum — a strong fibrous sheath. A periostitis is an inflammatory condition of the periosteum; when the cortex is involved it is called osteitis, and myelitis when the involvement is of the bone marrow, and when both bone and marrow are affected osteomyelitis is the resulting disease.

In the past it was a debatable question as to whether the infection began in the medullary cavity or in the periosteum. The X-ray seems to have proven that the former is the primary focus, spreading by means of the haversian canals to the cortex and periosteum.

Then comes the destruction of bone along these haversian canals, which are so numerous and spread so well throughout the bone that we now have normal bone competely surrounded in an island-like formation. This portion of bone becomes devitalized forming the familiar sequestrum.

Again is the X-ray valuable in locating these sequestra, and of more value still to

determine when the necrotic bone should be removed, that is when the supporting framework is sufficiently strong to preserve the continuity of the bone after the removal of the necrosed shaft.

In making a classification of any disease the various groupings are arbitrary and usually arranged for convenience, so in spite of the various classifications of osteomyelitis it is preferable in radiology to divide this disease into two general subdivisions; the acute in which there is a great amount of bone destruction with very little bone reproduction and the chronic type in which bone reproduction is far in excess of destruction.

To emphasize this point the X-ray diagnosis of osteomyelitis as to its acuteness or chronicity depends upon the ratio of production and destruction of bone.

In addition to the above our diagnosis of this disease depends upon other bony changes, the formation of sequestra being an important diagnostic point. In this condition the shaft is not really expanded, although the deposit of bone on the outside may give it this appearance. The cortex is not destroyed but it is punctured in several places. Osteomyelitis while usually confined to one bone is sometimes found in one or more bones.

The first thought in every pathological process in mone is malignancy and this must first be disposed of before considering other conditions. If malignancy begins in the medullary canal it grows equally in all directions, destroying the cortex and leaving no normal bone within its limits. With only two exceptions—periosteal and osteosarcoma—in malignancy there is no new bone production in and around the malignant tumor. These clearly differentate malignancy from osteomyelitis in making the infection spreads by means of the haversian canals with destruction of bone but with normal bone between the destroyed areas. The cortex is not destroyed but is broken through in two of these places, and new bone production occurs at the edges of the infection, which indicates that nature is taking a hand in the fight to limit the infection.

In benign conditions arising within the medullary canal the growth is slow and when it comes in contact with the walls of the bone it expands slowly, thinning out the cortex but not destroying it. Some new bone is laid down at point of contact. Unlike malignancy the growth is cylindrical rather than spherical.

Paget's disease shows fewer bones involved, there is bone production and the skull is affected, while in osteomyelitis more bones are involved, no new bone formation and skull is unaffected.

Osteitis fibrosa cystica presents a very striking feature in the softening of the bones. The cortex is intact, but expanded and thinned with large cystlike areas in the medullary canal. Long striae of lessened and increased density occur enclosing these cystlike areas, which have sharp borders.

In intermedullary bone grafting fitting bone splint is introduced into the medullary canal, after some time there is a pressure atrophy that might be mistaken for osteomyelitis, inasmuch as due to pressure absorption there is a vacuolated area around the splint.

This probably disposes of the principal conditions to be differentiated from osteomyelitis with the exception of tubercular osteomyelitis which is rare and luetic osteomyelitis which is rather common.

MENTAL HYGIENE.*

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Mental Hygiene is preventive medicine, in so far as it applies to psychological man-

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ifestations and it is directed to the initiation and maintenance of correct habits and adequate, effective individualistic adaptation and accommodation to environment. The term, Mental Hygiene, was originated by Dr. Adolf Meyer and came into use in 1909 when Clifford W. Beers launched a movement, the principles and application of which are now being promoted by The National Committee for Mental Hygiene.

About the year 460 B. C. Hippocrates advanced the theory that mental disease results from a disordered brain. Nevertheless, ignorance, superstition and misconception persisted and those persons considered insane continued to be confined in frightful places, fettered and at the mercy of brutal attendants.

In England, during the closing years of the eighteenth century, notable advances, in caring for individuals mentally disordered, were initiated at St. Lukes, London, and the York Retreat. At Hanwell, Dr. Conoly instituted definite reforms, as did Pinel and Esquirol in France. At the end of the same century, in addition to custodial betterments, efforts were expended in the study of the nature and treatment of mental disorders. Even in this country, at present, are many hospitals in which mentally ill patients are given little more than custodial care; possibly some in which they are even ill treated, and only a few in which they are studied and treated in accordance with modern scientific methods.

The objects of Mental Hygiene are, to organize efforts to preserve mental health; to prevent mental and nervous disorders and mental defects; to elevate the standard of care and treatment of those suffering with these ailments; to acquire and disseminate accurate, reliable data relative to such conditions as well as to the mental factors involved in the problems of industry, education, delinquency and dependency; to cooperate with the Federal, State, private and public agencies in related activities.

Factors which assist in the accomplishment of such endeavors are education, social service, surveys, legislation, co-operation. The benefits accrue not only to the insane, feeble-minded, and mentally deficient, but to all those, who, through mental causes, are unable to adjust themselves to their environment either at home or abroad. They will be assisted in their efforts to live happy and efficient lives. In this, as in all things, now as always, education of the public is of almost supreme importance. Education waits on cure as often as cure on education.

In its beginning Hygiene dealt with physical things of the simplest character and was known as preventive medicine. As cities grew, overcrowding became a menace to the public health; difficulties arose over sanitation, sewage disposal and water supply. Public parks and playgrounds improved environment and a greater direct interest developed in people as a group; living and working conditions meliorated.

As a result we have statutory limitation of working hours, child-labor, liability and compensation laws. Necessarily, the rights of individuals are increasingly infringed upon. One must pay school taxes whether or not he has children in school; buildings and dwellings must conform to building regulations; employers are made responsible for acts of employees. Communicable disease must be reported; vaccination is compulsory; quarantine restrictions become operable during epidemics. The individual is considered only a factor in the community environment and is regarded more as a unit of the group. In this manner public health has been made extraordinarily efficient, though, perhaps it has rendered life somewhat more complex.

We are learning to recognize the individual not alone as a community or social

unit but also as one presenting a problem distinctly personal in character. Mind is the adaptive mechanism or means through the use of which man is in accord or discord with his environment. To be attended by complete success we must consider individual and environment without disregarding inter-active factors. The essentials of physical hygiene are—fresh air, good food, exercise, rest; these are also necessary to mental health, as a healthy mind depends on a healthy body, and the reverse is true.

"To see a man as a social animal and his failures as forms of social inadequacy; to approach these problems free from prejudice and with a full appreciation that, in each instance, the failure has back of it a cause adequate to explain it; then to bring to bear upon the problem those forces which are best calculated to bring about results which are constructively of value, both to the individual and society; and then to be able to apply the principles worked out in dealing with individual cases, to the larger, more general issues—these are the problems of Mental Hygiene."(1)

Adaptation is the habit of adjusting oneself to individuals and material circumstances surrounding one rather than attempting to cause environment to conform to one's wishes and desires. To be cultivated is orderly thinking and the acquisition of lasting, wholesome, stimulating interests. A proper balance must be maintained between stimulation and response; excessive emotion should not be aroused; there should be a sensible division of work and play and a reasonably correct appreciation of the relative significance of success and failure.

Mental Hygiene has to do chiefly with mind and therefore with personality or the sum total of our reactions; and the causes of social inadequacy must be sought after within the individual and his reactions to environment. Mental functioning results in activity—conduct or behavior——and as Mental Hygiene strives to conserve mental health it is concerned with normal as well as abnormal mental processes.

Estimates reveal that one-fourth to one-third of all mental disease is preventable through application of recognized though not universally known means. Eradication of syphilis and prevention of alcoholism will surely reduce mental disease. Unfortunately, the medieval attitude still exists and the afflicted individual, instead of promptly seeking competent medical advice, resorts to secrecy, in the hope of avoiding disgrace, and hospitalization without hope of escape. Imperative is the necessity for immediate and thorough investigation into the cause of all mental disturbance, conduct disorders or personality alteration.

Preventable by observance of the rules of Mental Hygiene are many mental disorders following overwork and fatigue; exhaustive and painful illnesses; sudden intense or prolonged stress and strain of opposing desires, ambitions, duties or responsibilities.

Activities in the field of Mental Hygiene of Childhood are of especial interest and importance. Then the mind is in a formative and impressionable state of development when bad habits and mental attitudes are more susceptible of being checked and good ones substituted and much can be done to lessen and prevent delinquency, crime, vagrancy, dependency and actual mental disease in later life. Great assistance can be given along these lines by parents and teachers whose familiarity with the principles of Mental Hygiene and their practical application will be of inestimable value.

(1) White: Principles of Mental Hygiene.

THE VALUE OF A ROUTINE EXAMINATION OF THE EYES IN A GENERAL DIAGNOSTIC CLINIC.*

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The relation of the ophthamologist (as we prefer to be called) to general medicine is well known, but the importance of a routine eye examination has been undervalued.

The value of the ophthamologist in relieving headaches due to eye strain by the proper correction of errors of refaction with glasses, or other measures is now universally known to the lay public almost as well as to the profession. Now most sufferers of headaches come to us of their own accord, but we should prefer to have our confreres refer such patients to us accompanied with the report that they find nothing in their general condition to account for the headaches. Then our percentage of cures would be higher, and the interdependence of the various branches of medicine would be more satisfactory. As it is now, we are sending patients back to their own physicians because there are some other factors producing the headaches, which require attention at the same time as the eye. Often these may be the sole cause of the ailment and the eyes themselves are not at fault.

The aid that the ophthamologist can give is not limited alone to diagnosis, but also in checking up with the treatment and progress of systematic diseases. All patients with cardio-vascular renal disease; arterial hypertension; nephritis; diabetes; diseases of the blood of the skin; tuberculosis; and pregnancy should have as a part of their routine examination a careful eye examination, both external and ophthalmoscopic by ophthalmologists, who know the detailed findings of other examiners.

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It is often that in the eye first of all we note evidences of arterio-sclerosis; nephritis; tuberculosis; diabetes; syphilis; cerebral neoplasms and grave nerve disorders.

We know that the eye is about the only organ in the body with transparent tissues, and through these we may see the blood coursing through the blood vessels, thereby disclosing the secret processes of disease and repair. With the advent of the Gullstrand slit lamp and corned microscope a new field is opened for the ophthalmologist, and the time is not so distant when from changes in the eye alone we will be able to diagnose many diseases before there are signs and symptoms in other parts of the body. Many of these changes in the tissues of the eyes cannot be grossly demonstrated but can only be seen with intense illumination and high magnification. This is exemplified in the diagnosis of tuberculosis in the eye which has to be accepted by clinicians because of later findings in the lungs.

The optic nerve is the largest one of the cranial nerves, but is so soort that it is often spoken of an offshoot of the brain. It ends in the posterior part of the eye and may be seen on end as a flat, rounded, white disc. Here is the barometer that may register the degrees and fluctuation of intra-cranial pressure, due to tumor or abcess, meningitis or other inflammations, or in increased pressure that follows often after fracture of the skull. Every injury to the head should be followed by an opthalmoscopic examination, even if vision is apparently not affected.

The eye itself is seldom the primary seat of disease (except in glaucoma, malignancy, injury (and a few others) but is the effect of cause or causes that derange the human economy and find expression in the eyes. Thus, it is in examining various parts of the eye that we are able to give to the other examiners clues which are of value in making a diagnosis. It is

also true that if we attempt to treat the eye independently we will fail.

Benedict of the Mayo Clinic says the ophthalmologist is not justified in treating independently luetic diseases of the eye, tuberculosis, metastatic infection, endocrine disturbances, neuroretinitis, choked disc, disturbances of motility, head aches or even errors of refraction.

Chronic blepharitis or disease of the margins of the lids is a condition of the patient that is often indicative of malnutrition, lack of vitamines, endocrine disturbances or improper hygienic surroundings. This is also true in many of the chronic conjunctival conditions, especially in phylyctenular disease which is often associated with tuberculosis, improper hygienic and dietetic conditions.

The common disturbances of the cornea are: phylyctenular disease in children, interstitial keratitis always due to lues, hereditary as a rule, trophic ulcerations in adults due to run down conditions or endocrine disorders.

From the disturbances of motility of the eyes, either as an apparent or real squint, or from diplopia we can help in the diagnosis of encephalitis lethargica, lues, fracture of the skull or sequellae or infection diseases as diphtheria.

Then from Argyl Robertson pupil which reacts to accommodation and convergence but *not* to light, we may diagnose tabes dorsalis or early general paresis. Then there are also other pupilary reactions which may help in the diagnosis of psychoneurotic conditions.

From scars or other lesions in the iris we may diagnose lues, tuberculosis, leprosy, gonorrhoea, rheumatism, focal infection, and malformations, both congenital and stigmatic.

In the ciliary body we have very much the same lesions on account of the contiguity of the tissues, but we see in addition products cast off into the anterior chamber and on the posterior surface of the cornea as deposits.

The lens as the seat of cataracts, senile or patho-phytologic etiology as yet unknown, congenital cataracts in children, pathologic due to lues, diabetic or unclassified.

In the vitreous we find opacities which are products of diseases of the posterior part of the eye, as the choroid, and it is with the new slit-lamp that we are beginning to study and classify them.

The choroid and the retina may be considered together for it is in the fundus that the lesions are noted by means of the ophthamoscope. From a swollen or choked disc we can often diagnose cerebral tumors or other inflammations; from retro-bulber optic neuritis, sinus disease; from an atrophic disc, lues and from an excavated disc glaucoma.

The blood vessels of the fundus are next examined. The arteries are narrowed, or enlarged, hemorrhages of all types, a diagnosis of arterio-sclerosis can be made. Various blood dyscrasias can likewise be discerned.

The fundus proper is the seat of numerous inflammations and exudations and from these lesions we may diagnose the following conditions: Arterio-sclerosis, which is the most commonly found disease of all; lues, which have myriads of lesions in both retina and choroid; focal infections; retinitis albumeneric of pregnancy or nephritis; retinitis of diabetes, and retinitis of pigmentary degeneration.

In addition to the actual finding of the lesions found in the different parts of the eye, the vision and fields of vision must be considered as essential components in making a diagnosis. This is particularly true in diagnosis of cerebral tumors, where the fields are just as important as the tabled disc itself.

Two cases will bring out the relationship between ophthalmology and general medicine, as follows:

Mr. S., white male, age 65 years, came to me because of gradual loss of vision for past two months in the right eye. Vision of the right eye was obscured by fingers at two feet; vision, left eye, 20-30, or practically normal. The examination of the external part of the eye was negative as were the pupilary reactions. Fundus examination of the right eye showed marked hardening and narrowing of the arteries, where the arteries crossed the dilated and engorged veins, they impressed or indented them. There were marked hemorrhages of all sizes and shapes, some of them organized and scar tissue formed. This was marked in the macula or region of most acute vision.

Diagnosis: Arterio-sclerosis — hemorrhagic retinitis. No treatment was given to the eye locally but the patient was referred to his family physician for a general examination. This revealed a marked arterial hypertension, blood pressure over 200, 5 per cent of moist albumen and a low phenosulphophthalien test. Appropriate treatment and diet were instituted. He had no other symptoms and it was only through the examination of the eyes that his serious condition was discovered. The right eye itself never regained vision for the hemorrhages had become organized. The left fourteen months after the first examination was the same.

Case 2. Mrs. W., age 31 years, came to me because of a swelling of the lids and the bulging out of the whole eye. Examination showed a well developed white female of middle age. The lids of the right eye were edematous and palpebral aperture somewhat diminished. The right eye was exophthalmic in comparison with the left, and the pressure on the right eye produced pulsation. The vision was very slightly diminished. Outside of the retinal veins being engorged the examination of the media and fundus was negative.

A more detailed history elicited the fact that the swelling of the lids and the exophthalmos came on suddenly during the night. The patient went to bed perfectly well and awoke the next morning in the condition described. Since then she has been annoyed by a roaring in the right side of the head, more pronounced when lying on the right side. The noises are best heard over the right temple. This statement by the patient was borne out with a stethoscope, or even the ear, a loud bruit having been heard over right of head, most marked over temple. A diagnosis of arterio-venous aneurysm of the right cavernous sinus was made and the patient was referred to the surgical services of Charity Hospital for treatment, and was cured without operation. There are many other details in this case, which are not under discussion at present, but it was through the eye condition primarily that she was referred to the proper channels for treatment.

Another condition that may be disclosed in a routine examination is an intra-ocular hypertension, called glaucoma. This is the most insidious of all diseases of the eye that lead to blindness. It is only with difficulty that it may be found by those who are constantly on the alert for it. It occurs most frequently in patients past middle age, especially at the time when the accommodation of the eye is on the wane and glasses for near work are needed. It is attended only by vague subjective symptoms; such as, slight cloudiness of vision at certain times of day, the perception of halos or colored rings around lights, the necessity of frequent changes in glasses.

The danger of this one disease alone should make it incumbent upon anyone requiring glasses to have a thorough eye examination by an ophthalmologist.

Ophthalmology is making advances and is keeping pace with the trend of modern preventive medicine. It is gaining its well-justified recognition, but pleads for a closer and more genuine co-operation from the other branches of medicine.

DISCUSSION.

Dr. P. A. LeBourgeois (New Orleans): Many come to the ophthalmologist that seem to be eye cases per se, which in reality are a manifestation of a constitutional condition such as lues, diabetes, nephritis, arterio-sclerosis, tuberculosis, and even foci of infection in other parts of the body.

Every case of nephritis should have a careful opthalmoscopic examination of the eye, for we know that when albumen uric retinitis is present the prognosis as to life is very grave, regardless of favorable clinical symptoms. Of course the prognosis of albumen uric retinitis from pregnancy is not so grave, but here again the general practitioner is warned of impending danger.

Frequent styes may be often an indication of diabetes or a pre-diabetic state.

Slight swelling of the lower lids, call for an examination of the urine and cardio-vascular system, but may also be indicative of a low grade

focus of infection which is often located in one or more of the sinuses.

Just as a practitioner should warn every woman that has reached the age of 35 of the symptoms of beginning carcinoma of the cervix, so should he warn every man or woman who has reached the age of presbyopia of the symptoms of that most insidious disease—glaucoma.

Doctor Meyer's paper should be of great value to general practitioners, as he has thoroughly covered the conditions affecting the general health that may give eye symptoms.

Dr. T. J. Dimitry, (New Orleans): I was quite pleased to hear Doctor Meyer's paper. One thing that has impressed me was the fact that he has brought out that the eye is strictly an expression of the whole; that after all it is an X-ray photograph and its study from which we must draw conclusions. It seems to convey to us that the eye being a part of the whole simply makes it a means of interpretation of the general disease or the focal disease. I am doubtful whether there is an entity per se existing in the eye itself, a pathological condition per se existing in the eye, if you will permit me to exclude such cases as conjunctivitis and malignancy. But the eye is simply a means of interpretation of the whole constitutional condition or of the same focal condition existing somewhere else. I doubt the existence of real primary optic accuracy. That disease of the eye might have sprung into existence without cause, and if there is a cause, it did not come by a chance throw of the dice, but yet the cause is not located within itself. You might say, well, there is glaucoma, might we not have a condition called primary glaucoma? Can we have such a condition? If you wish to say there are congenital defects that have brought about primary glaucoma, I will admit that. We have such a thing as primary glaucoma, but primary glaucoma as a cause is not within the eye itself; it is remote from the eye. Either there is something that has changed the consistency of the fliud, or there is something has caused a change in the tension, of which glaucoma is the result. Some one may ask if we do not have such a thing as senile cataract. Senility is a disease, it is a pathology, and the cataract is secondary to the pathology.

As I see my specialty, we will be finally out of medicine. We will be used as a means for interpretation, as a means for diagnosis, and we will be used to assist our confreres in the diagnosis and interpretation of conditions existing in the eye, and that ends our usefulness. If we are really adhering to the practice of the eye solely, a man will send us a case, we will interpret the eye findings and send him back the case, because it belongs to him. Let the surgeon do the surgical end of it. What I would like to convey is this, that the eye is a small part of our body and it merely gives an interpretation of the things that might be found in different parts of the body.

Dr. Monte Meyer (closing): It all shows that the farther we get along in years the more dependent we are on the different branches of medicine. I thank you.

THE TREATMENT OF ACUTE EMPYEMA.*

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The condition known as empyema was recognized by ancient medicine, and even in the time of Hippocrates physicians were conscious of the value of opening of the thorax to evacuate the pus accumulations. Intercostal incision with the cautery and trephining of a rib were practiced, though with a very high mortality, usually caused by prolonged suppuration and sepsis. Because of this high morality, the trend of opinion gradually turned against operative procedure until the time of Celsus, when it was abandoned only to find a mortality of 90 per cent without surgery. However, with the revival of learning in the 16th century, the beginning of post mortem study and the renewed interest in the works of Hippocrates, surgical intervention again came into the foreground and has since been the leading recognized treatment. Varying types of operations and procedures have been devised and advocated to combat the condition—all striving to accomplish the same purpose.

Empyema has been the subject of numerous discussions and theme of many essays. There is even today, great divergence of opinions as regards its cause, the method of production and the proper course to follow in its surgical treatment. This disease invites the attention of surgeon and internist alike, for it may occur as a pri-

*Read before the Orleans Parish Medical Society, June 22, 1925.

mary affection or appear as a complication to any of the diseases. It is not the purpose tonight to enter into a discussion of the cause, diagnosis, or the essentials constituting an empyema, but to limit the remarks to the treatment of the acute form of that disease. The interpretation here of the term is understood to mean any collection of pus within the pleural cavity either interlobar, free or encapsulated.

Empyema is considered by some as a simple condition requiring only incision with drainage,, allowing the patient a "laissez faire" post operative care. It is true some will recover while others will die. Unfortunately too many do not survive this procedure as a routine treatment. Empyema is not a simple condition to be smiled upon, but should, upon discovery, be closely and carefully studied as a serious malady. Its diagnosis in addition to the usual physical signs is usually established by exploratory thoracentesis. Once this is dtermined, the patient passes from the medical into the surgical care. There are several courses which may be followed; simple aspiration with introduction of antiseptics or dyes; intercostal incision; thoracotomy with packing of the pleural cavity; thoracotomy with rib resection and open pneumothorax; or lastly, thoracotomy with closed drainage supplemented either with or without irrigation.

While operation has been performed during many years in empyema, even now mortality percentage is higher than should be and our treatment has not reached the degree of efficiency expected. Lavrow (15) figures a mortality of 55 per cent for all cases, while Lloyd reports the low mortality of 20 per cent. Wilensky (3) in a study of 299 consecutive cases from records of Mount Sinai Hospital for the period 1904 to 1914 reports a mortality of 28 per cent. Many of these were in children and others were in poor general condition, not even surviving the simplest operation—(the insertion of a catheter through a camula).

The reports of 25 army camps, as compiled by Major Graham (8) from replies to a questionaire sent the principal Base and General Hospitals, give an average mortality of **30.2 per cent.** This includes a mortality at Camp Funston of 84 per cent in 85 cases; at Camp Greene of 53.2 per cent in 92 cases and 65 per cent at Camp Wheeler. Here it must be recalled as partial explanation that during this period a most virulent infective organism was present, the hemolytic streptococcus. However to quote from Graham's "Report of Empyema" to the Surgeon General—"The possible explanation of the striking differences in mortality reported from various camps in the empyema cases are to be found, first, in the fact that there has been a marked disagreement concerning what cases should be considered as empyema, and secondly, in the method of treatent employed.

"Owing to the fact that the exudate most commonly found is a slightly turbid serofibrinous fluid, with pus demonstrable only microscopically, in some camps only those cases have been considered as empyema which yielded frank microscopic pus. In general, those camps which reported the lowest mortality have regarded as cases of empyema, only those in which the exudate has been frank pus; and conversely, the highest mortality figures have come from those camps in which all cases showing even microscopic pus in the pleural exudates have been considered as cases of empyema."

The Empyema Commission (6) at Camp Lee in a study of 23 cases, reports a mortality of 4.3 per cent. The mortality in this series is the smallest encountered in the review of the literature. Two considerations here must not be overlooked—first, the Commission was working under army supervision with unlimited assistance and resources at command. Secondly, it must be recalled the investigation was conducted during the waning of the influenza epidemic during which period the virulence

of the infective organism had certainly decreased. In spite of these facts, it would seem the figures show our mortality may be greatly reduced when diligent attention is directed toward the treatment. It was found inadvisable to operate during the treatment. It was found inadvisable to operate during the early stage when the exudate was of a serofibrinous character. During this period, aspiration may be practiced for relief of mechanical lung embarrassment and to lessen the mediastinal structures from pressure. This opinion is generlaly accepted as sound since during this stage of the empyema an active pneumonia is usually present. It is in these cases Major (8) reports excellent results from simple aspiration with re-introduction of a solution of gentian violet.

The Commission (6) seemed to be convinced of three important factors; first, the value of pus evacuation; secondly, the advisability of cavity sterilization by Dakin's solution and lastly, the necessity of preventing lung collapse by pneumothorax. While the true closed drainage technique was not followed, the essentials were carried out and apology was made for not possessing the ideal apparatus for drainage which does not produce pneumothorax. A limited pneumothorax while not desirable, is not dangerous, for this may quickly be absorbed, but an extensive open pneumothorax favoring the production of massive lung collapse is extremely objectionable and shocking to the patient. The principles of the various apparatuses used in empyema drainage are: the maintenance of a negative pressure, the prevention of a pneumothorax, and removal of pus accumulation. Most of these are cumbersome and of only partial practical value.

In selecting an operation and determining a post operative treatment, the simplicity of the procedure, the effect upon the organism and the results obtained should be carefully considered. While there are many operative procedures advocated for acute empyema, essentially there are but two; first, the open drainage and secondly, the closed drainage. Neither of these is new, the former dating to the days of Hippocrates and the latter having been advocated by Bulan who described in 1891 the syphon drainage excluding air with continuous drainage under slight negative pressure. Simple aspiration of the chest was practiced by Playfair as early as 1873. Today this procedure supplemented by reintroduction of certain dyes is advocated in early cases. Dr. Ralph H. Major (8) reports treatment of 27 cases by injection of gentian violet with 18.5 per cent mortality. Analysis of his cases gives 51.8 per cent as cured; 29.6 per cent came to secondary operation; and 18.5 per cent died. Dr. R. C. Davis treated 18 cases by this procedure all of whom recovered without operation. One half of this group were produced by the streptococcus. One case produced by the pneumococcus became sterile after one injection.

The value of irrigation in sterilizing the cavity after operation is well established and favorably viewed by all. Stevens (4) in a recent study of recurrences after operation for empyema concludes that percentage of recurrences is highest in cases not having had irrigations with Dakin solution. His figures are as follows:

1.	Healed without irrigation by Dakin	56	
	Recurrences	10	18
2.	Healed with irrigation by Dakin	63	
	Recurrences	3	4.7

The Empyema Commission (6) recognized this fact in its expression that Dakinization of the cavity leads to the hope that such an extensive operations as decortication of the lung may become unnecessary. In addition to the sterilization by Dakin solution, the fibrinous exudates become easly and quickly liquified hastening lung expansion. Moschcowitz, (13) who has been a champion of the extensive and mutilating operations of Estlander, Schede, Delome, etc., changed his view as evidenced by the following quotation. "The far reaching observations at the War Demonstra-

tion Hospital of the Rockefeller Institute have taught us that epyema cavities can be rendered bacteriologically sterile by means of the Carrel-Dakin treatment."

"During my stay at General Hospital No. 12, I had an experience which threw a flood of light upon speculations as to closure of empyema. An empyema treated by Carrel-Dakin method had been finally allowed to heal. About one month after healing, my colleague upon the Empyema Commission, Dr. Franklin A. Stevens, found upon routine physical examination, which was verified subsequently by Rontgenray examination that the patient had a definite pneumothorax. I watched this case with great interest and care. An occurrence of this character was unknown to me, and I confidently looked forward to a reaccumulation of the pus. The unexpected, however, happened. Not only did no reaccumulation occur, but the pneumothorax disappeared and was replaced by the expanding lung. * * * Whereas up to that time operations upon cases of chronic empyema were of almost daily occurence with me, I immediately ceased all further operating and merely proceeded with intense sterilization of the cavity. When sterilization was complete, all treatment was discontinued and the outer wound allowed to close. Subsequent examinations showed healing occurred through the intermediary stage of a pneumothorax, as in the case just related." He further states: "Formerly I was much more radical in my views and I recommended extensive operations in cases which I know now would heal without operation."

Moschowitz (13) advocates intercostal incision with introduction of a catheter drain about which the wound is packed and sealed with a rubber flange attached to the tube as it emerges from the chest wall. This in turn is fixed tightly to the skin surface by strips of adhesive. The catheter is connected to a combination irrigation — suction apparatus which provides slight negative pressure and insures drainage with prevention of pneumothorax. This procedure fulfills all the principles of a closed thoracotomy drainage. Why cut the thorax open uselessly only to close it? The experiments on dogs conducted by Graham and Bell (5) lead these investigations to the belief that a closed pneumotharox gives less embarassment than open pneumotharax in cases of empyema.

The revival of the so-called closed method of drainage in the treatment of empyma is due chiefly to Monzigo (12) who reported observations on 70 cases at Walter Reed General Hospital treated by this method with excellent results. He found the procedure associated with no shock or compression of the lung. There was a rapid sterilization of the cavity, with quick expansion of the lung. The dressings were infrequent and patients were gotten up after a few days with convalescence quickly accomplished. The procedure is based upon simple but sound principles rather than upon extensive major operations. The pus collection is located by examination, puncture, and X-ray study. After the usual general preparation of patient and skin surface, a point over the most dependent portion of the empyema is selected (preferably over the 8th intercostal space at the posterior auxilliary line) and after local infiltration with .5 per cent novocaine solution a small skin incision about 6 or 7 mm. in length is made. Next a trochar and canula sufficient to permit passage of a 22 or 24 F. catheter has been previously prepared by cutting its tip at an angle and a 5 cm. window made about one cm. from its point. This is clamped and held in readiness for introduction through the canula upon withdrawal of the trochar. Care should be exercised to act quickly to prevent aspiration of air and producing pneumothorax. The canula is now withdrawn by threading over the catheter which is left in place so that from 2 to 4 inches are within the cavity. The soft structures at once close tightly

about the catheter, sealing the entrance which may be further secured by a bit of cotton wet with collodian. Immediately outside the thorax a strip of adhesive is wrapped about the catheter in such a way as to make two flanges through which safety pins are passed close to the tube. These pins are now plastered to the chest wall by a 2 inch strip of adhesive passing around the thorax holding the catheter securely in place. When properly executed, there is no leakage of consequence about the tube, thus minimizing necessity for frequent dressings.

At frequent intervals, two to four hours, depending upon the case, gentle aspiration is performed, using an ordinary syringe attached to the catheter. Following each aspiration, careful but thorough irrigation with Dakin solution is executed, agitating to insure contact of solution with all portions of the cavity walls. As a general rule, the cavity may be emptied at the end of forty-eight hours, however, a longer time is advisable in those cases possessing a very extensive collection, particularly of the left side where the heart is pushed into the opposite axilla. In this type it is best at the onset to replace a portion of the pus aspirated by saline or Dakin solution to maintain the pressure allowing mediastinal readjustment by gradual decompression. This permits the organism to regain its equilibrium slowly without shock or embarassment of either respiratory or cardiac origin. The series conducted at the Charity Hospital includes four such cases in whom the procedure is certain to have aided in recovery. One of these necessitated secondary operation, while the remaining three made complete recoveries.

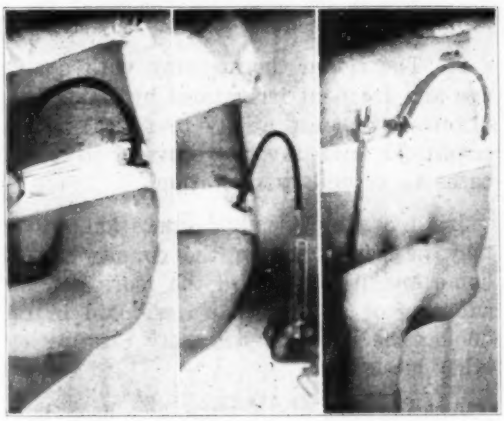

PLATE I, II, III.

Plate I. Showing Catheter Drain with Dressing. Additional Catheter prepared to show adhesive flanges and safety pins in place.
Plate II. Irrigation by gravity.
Plate III. Catheter clamped and fastened to adhesive dressing, which encircles chest.

It has been advanced that upon the introduction of Dakin solution into the empyema cavity there is a resultant coughing produced by irrigation. Such may occur in the presence of bronchial fistulae, but this is not objectionable. Under this condition saline may be substituted, but small quantities (10 cc.) of Dakin's may also be used without inconvenience to the patient. Frequently a change in position will relieve the irrigation and allow thorough washing to be continued. The greater percentage of bronchial fistulae heal spontaneously and should give no cause for alarm.

As soon as the absence of pneumonia is established the patient is permitted and encouraged to get up in a rolling chair, and after 48 hours, or when the cavity has been emptied, gentle pulmonary exercise is instituted by blowing against resistance since this favors rapid expansion of lung structure. After seven to ten days of aspiration and diligent irrigation with Dakin's, the cavity is usually surgically sterile and may be allowed to heal by withdrawing the tube slowly permitting healing from depth.

A study of the empyema cases at the Charity Hospital for the six years 1919-25 shows a total of 128 treated by operative procedure with 40 deaths, or a gross mortality of 32 per cent. Of this series, 85 were treated by open thoracotomy generally associated with resection of a portion of one or more ribs. Of this number 55 (64.6 per cent) were discharged from

sessed a draining wound and some with temperature ranging from 99 degree to 102 degrees. For the latter reason the percent of cures could not be determined. The open operation was accompanied by 30 deaths or a mortality of 35.3 per cent. There were 43 cases treated by thoracotomy with closed drainage and irrigation with Dakin solution. Of this number all of whom were treated during the past two years, ten patients, died giving a mortality of 23.2 per cent. Of the 33 (76.5 per cent) who survived, twenty-six (65.5 per cent) have made complete recovery, 7 (16.3 per cent) are now in the hospital convalescing, and 10 (23.2 per cent) have died. There were 3 (6.9 per cent) in whom a secondary operation was performed with speedy recovery. Two of these would have cleared up without further operation but were among the first treated by this procedure. The third case passed from under our care, thus making it impossible to continue treatment. It is certain that some cases will come to secondary operation, but the patient is in a far better general condition to undergo the procedure and the operation is of a minor surgical nature. Therefore, in such cases, two simple minor surgical procedures have been substituted for one more serious major operation.

While the mortality of 23. 2 per cent in this series of empyema treated by closed drainage and irrigation with Dakin's compares most favorably with that of 35.3 per cent obtained by open operation, it is believed this mortality may be materially reduced by adhering to this simple method, giving attention to the post-operative care.

Conclusions.

1. Empyema is a formidable condition requiring serious consideration as regards operation and post-operative care.

2. The mortality is too high and may be lowered by more careful attention.

3. The value of Dakin solution in bringing about a rapid sterilization of the empyema cavity is well established.

4. Aspiration and introduction of dyes may be employed in cases possessing only microscopic pus.

5. The treatment of acute empyema should accomplish:

(a) The lowest possible mortality.

(b) Drainage by the simplest means at the surgeons hands, with least possible shock to the patient.

(c) Rapid evacuation and sterilization of the cavity preventing formation of pneumothorax and favoring by maintenance of slight negative pressure the early expansion of the lung, thus minimizing possibility of states of chronic empyema.

6. The closed thoracotomy with drainage and frequent irrigations by Dakin solution seems most nearly to fit the above conditions and favors recovery in those cases to secondary operation.

It is a simple minor operation which may be performed in the country or at home and it is believed the more general adoption of the procedure will aid in reducing the too high mortality existing by other methods.

Already too much time has been consumed so I shall only present a few of the slides showing the progress of treatment by the closed method. There can certainly be no great advantage in resecting a rib, throwing open the pleural cavity and then attempting to close the wound about the tube tightly enough to prevent leakage or induction of air. This procedure is most frequently accompanied by a collapse of the lung, shock to the patient, and an unclean wound—constantly leaking about the tube and soiling the bedding. It is evident that the open end of the drainage tube can not be kept submerged in antiseptic solution, since the movements of the patient frequently draw the tube above the fluid level allowing the aspiration of air into the pleural cavity. This fact reduces the advantages of this

method to little more than those of open thoracotomy. At present there is in the hospital a patient operated by this procedure more than a month ago. Skiagraph of his chest is presented showing today almost total collapse of the lung on the affected side with associated pyopneumothorax.

It has been the good fortune to have under treatment within the past ten days a case of acute empyema and one of so called chronic empyema, both of whom are being treated by closed drainage with irrigation. The former had been sick for six weeks or more and within seventy-two hours following the operation there was a negative culture. This patient was allowed to sit up in a chair after the fourth day and is now ambulatory. The latter case had previously been operated elsewhere eighteen months ago, but the wound has never healed. Upon the institution of treatment there was a partial collapse of the lung with a cavity measuring 650 cc. Today the cavity has a capacity of 140 cc. and the patient is generally improving.

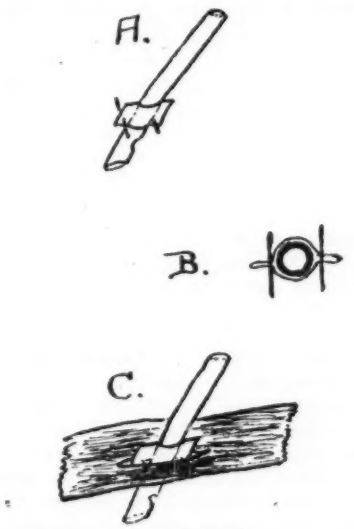

PLATE IV.

A. Catheter prepared with adhesive wing flanges thru which are fixed safety pins. Lower end is beveled and possesses small opening about 1 c.m. from top.

B. Cross section through flanges. Heavy black circle represents Catherer. Outer light circle represents adhesive encircling Catheter and folded upon itself to either side to form flanges for safety pins. The latter are represented by parallel black lines.

C. Dressing complete. Catheter passed through slit in adhesive strip which encircles chest and secures Catheter in place by pressing safety pins tightly to chest wall. Lower end within pleural cavity.

The principle of true closed treatment of acute empyema consists in the introduction of a catheter into the cavity through a canula followed by careful, diligent, and frequent aspiration and irrigation. The catheter should be clamped between irrigations to prevent collapse of the lung and to maintain slight negative pressure.

The procedure is very simple and most efficacious.

My sincere thanks are extended to you who have so thoroughly and kindly discussed the subject.

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DISCUSSION.

Dr. R. S. Crichlow—I wish to mention two cases that have come under my observation during the past three years.

One was a case of empyema of the right side following pneumonia of the infectious type, operated on in 1919, employing the open method of drainage. About eighteen months ago I had an X-ray made of this patient. He had developed considerable discomfort and his side was still draining. I found, through X-ray, that the infection had gone from the right to the left and pushed the heart up almost to the lower border of the second rib. Through this opening into the cavity on the right side an exudate was drain-

ing and there was still considerable retraction going on.

The other also was a case of empyema following pneumonia of the infectious type. At the end of the tenth day this patient went through the usual stage of resolution, temperature dropped to 99 degrees, not completely normal, then for a few days up around the range of 100 degrees to 101 degrees. At the end of the week, under local, I aspirated and found pus. Patient was at once transferred to the Hospital, admitted to a surgical ward and treated by the closed method (catheter inserted—no jar used), not under my supervision. Five weeks later he died. Three days before the end an X-ray was made. The right side was entirely obliterated; the left side was also practically obliterated except a small point about the size of hand. Post mortem findings showed both pleural cavities filled with pus. Autopsy findings: Death caused by influenza bacilli.

Dr. F. W. Parham: In 1922 I presented this subject before the State Medical Society and in that paper I drew a comparison between the open and closed method of drainage.

In spite of the fact that Muller in Progressive Medicine had depreciated the revival of the old method of closed drainage, which he thought had now become obsolete. After thorough study of the question I was convinced that Muller was wrong and my subsequent experience has but strengthened the conviction.

Now, of course, in these cases of acute empyema (the subject of Dr. Irwin's paper), we are confronted with the two horns of the dilemma; the necessity of relieving pressure and the fear of increasing the danger by pneumothorax owing to the fact that we have often coincident involvment the lung itself. Especially is that the case in certain epidemics. I believe the mortality in the camps was due largely to the virulence of the organism producing the empyema and also accounts for the difference in mortality in the various camps. In the camps during 1918 pneumonia was quite a frequent complication of empyema and we had to go very slowly. The empyema commission was organized at Camp Lee during the war, ancient history you might say, but still worth repeating. It was during this time that Moschcowitz and the commission showed very definitely what we all found out later on in the course of our experience, that we had to be very careful in handling these cases of empyema. If we operated before the case had become a real abscess and the mediastinal partition had been fixed we ran the risk of fluttering of the mediastinal partition, by the admission of air suddenly the vital capacity being diminish d materially if we let the air in too rapidly. You are perhaps familiar with the experiments of Evarts Graham and others, which showed that an opening admitting air to one side of the chest produced an equal pressure in both pleural cavities. Especially in influenza cases there is involvement often of the lungs which are congested and more or less clogged with mucuous secretion and erudate. If we incautiously let air in we thus interfere materially with lung action. As the pressure of the pleural fluid must be relieved we must do this without letting air in—avoid an open pneumothorax.

Here is the usefulness of closed drainage apparent. In going over this subject I got together every suggestion that had been made regarding the various methods of drainage, of empyema, and finally came to the conclusion that the Brewer rubber spool, with the outer flange movable working was the most efficient means of air-tight drainage. When this is properly introduced there is no pneumothorax. I prefer to resect rib, because I get in that way a better counter pressure for the inner flange.

Make the resection just large enough to take the tube. When the flange is doubled up and flushed in and pulled up against the rib, there is little escape of the fluid in the chest and there is little air suction, the cavity being full. The tube of course, is clamped. The wound is then closed about the tube and the outer flange pushed up and clamped against the wall. The lower end of the tube is then into a bottle on the floor, half filled with carbolic solution. This is the plan employed by Moschkowitz and is more efficient than other methods. In the first twenty-four hours you do not want the discharge too rapid; when you have finally reduced the discharge you can let the drainage remain. Moschkowitz called attention to the fact that very often when you went in to see your patient you found him complaining of pain. He at once examined to see if the tube was in the bottle; the pain was caused by air passing up the tube whose end was out of the bottle. Keep under water—in this way you get sufficient suction and there is no danger of air getting into the pleural cavity. Now it seems to me that this particular apparatus is very satisfactory; when you carry out that plan, I think you can gradually a little later on, increase the intrathoracic pressure by instructing the patient to blow water from one Wolfe's bottle to another. This should not be done too soon for fear of tearing away of adhesions too rapidly.

I have used this method in a case for two months without change — only the wound about the tube need occasional cleansing.

I have had no trouble with rib necrosis. It strikes me that that method of closed drainage has come back to stay.

Dr. Sellers had me see a case with him of double empyema formation. We drained the pleural cavity very satisfactorily and later on trouble began to show itself again and we found, lower down, pus on aspiration. We made another opening and I was able, with my fingers in each wound to feel a distinct partition. Separate drainage of the two cavities resulted in perfected cure.

Dr. J. A. Dana: Dr. Irwin should be congratulated on the splendid results he has shown by this method. I am arising, however, to talk about something that has been discussed by each of the speakers already, but as something which is harmful and must be guarded against.

The reason an empyema cavity does not heal, or has difficulty in healing, is that the natural tendency in the chest is for the formation of a cavity with more or less rigid walls. Drainage cavity becomes a serious matter and, regardless of the method employed for drainage, difficulties are encountered. Consequently, we do the unsurgical thing of treating it by irrigation. We do not treat other cavities by irrigation—we treat them by emptying. What happens then? The bacteria are still there, but they come in direct contact with the tissue cells which are able to take care of the bacteria.

I have been keenly interested in artificial pneumothorax since I went overseas and saw the Italian surgeons practice it. I have had but two cases and in each the result was perfectly beautiful. It is impossible to empty a chest effusion by simple aspiration because the negative pressure prohibits. After a sufficient amount of fluid has been withdrawn your patient begins to cough. If you inject as much air as you aspirate fluid you can get out every drop at the first sitting. your patient feels a hundred times better and where before he was a very sick man. he is now able to get up and walk around. Because the fluid will re-accumulate to a certain point, more than one aspiration is necessary. In one of my cases three aspirations were done; the other on the fourth aspiration felt perfectly well. X-rays were taken, which I am very sorry I did not bring here tonight.

Artificial pneumothorax, properly used, is a very valuable weapon in the hands of the surgeon.

Dr. Shirley C. Lyons.—Dr. Irwin has presented his theme in a very excellent manner. It is a subject in which I am particularly interested, having worked eighteen months in the Department of Thoracic Surgery at Rochester previous to coming here.

Our technique is essentially the same as that outlined by Dr. Irwin. The importance of always using saline for the first irrigation cannot be over emphasized. Then if there is no evidence of a bronchial fistula, you may change over to Dakin's solution. I would like to call your attention to the use of hyclorite solution in place of the Dakin's. It is essentially the same, but there is one great advantage, which is that it comes prepared so it can be diluted with water to desired strength and thus prepared fresh each day. It does not deteriorate so readily as Dakin's solution and can usually be kept for an indefinite time.

The guiding principle in the choice of treatment of acute empyema should be conservatism. It would certainly seem difficult to justify a high mortality particularly if a safer and more effective measure is available. Shortening convalescence is often mentioned as one of the arguments for the more radical procedure, but it would seem that shortening convalescence does not justify an increased mortality. Therefore the first consideration in determining the choice of a method of treatment should be the life of the patient.

The second consideration is preserving the function, and third, shortening the convalescence. We are all familiar with the acutely sick empyema patient where death seems imminent. It is in this type of case that most surgeons readily resort to the closed method of treatment and by so doing many lives have been saved. Surely the type of treatment which is best for the dangerously sick patient is also best for the one not quite so ill.

It is attention to the post-operative details which means success or failure. In most instances you will find the poor results in cases where closed drainage has been used, has been due to failure on the part of the operator to carry out the many details necessary for the post-operative care.

The only contra-indication to the closed manner of treatment is the presence of a large bronchial fistula. Even in these cases, irrigation can be carried on for a few days with saline solution and the patient relieved of the acute toxic condition before submitting him to a rib resection.

In a series of four hundred cases of chronic empyema recently reported, fifty per cent of the cases had had one or more unsuccessful open operations; twenty-five per cent had been operated on by the open method and sinus allowed to close over too soon from the outside, resulting in a recurrence. The convalescence of the above cases would have been shortened and their comfort increased had the closed method of treatment been used.

Finally, the simpilcity and ease with which the closed method is executed, and the low mor-

tality rate, must surely appeal to both surgeon and patient.

Dr. Hamilton P. Jones: The character of empyema varies very much with the type of the causative organism. At El Paso (Fort Bliss) when I first reached that point, there were a large number of cases of empyema of the pneumococcus type. These cases had a very thick pus which was quite easy to evacuate and seemed to do well with the open method. This was followed by an epidemic of measles—measles with empyema—in which there was a rather liquid exudate. Those cases were treated to a great extent by the open method with a very high mortality. Subsequently we had the inflenza epidemic, in which the exudate simulated the exudate of the measles. But so numerous were the cases of bilateral empyema that something had to be done for them other than the open method; a great many of these cases were treated by the open method and died. Some were treated by irrigation with Dakin solution and with various strengths of formaldehyde solution, sometimes gentian violet. But it was found that these cases which had been irrigated presented a changed pleura, so changed that it would appear that these cases could never recover from the damage done to the pleura by the irrigation. Therefore, after a while we stopped irrigating our cases and used catheter introduced through a trocar. The trocar was returned and the catheter connected to a tube which led to a bottle beneath the bed—this bottle container fluid which acted as a check valve preventing air from entering pleural cavity the same procedure was followed on each side simultaneously.

We had, from the 15th of September to the 15th of November, 125 cases of empyema that were operated on either by the open or closed method and of that number forty died, which is a fairly good proportion of recovery. I do not remember the exact figures, but think the deaths from the open method were twice as high as from the closed. The thing to be desired in an irrigation substance is something that will kill bacteria, not destroy enzymes and cause no damage to the pleural surface.

This paper of Dr. Irwin's is most interesting. It revives an interest in a treatment which, to my mind, ought certainly to be considered a method of choice, if it is possible to practice it.

PARTNERSHIP IN HEALTH.*

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I am greatly indebted for the privilege of discussing with you the problem of cooperation between constituted health officials and volunteer health agencies in coordinating community health services rendered to the people of any city.

It is my purpose to discuss in brief, the development of Public Health work and to point out the relationship which now exists betewen Volunteer and official health groups and to suggest how that relationship can be strengthened in order to avoid wasted effort and misunderstandings, and in order to give the finest type of service compatible with the expenditure of all funds—whether raised through the normal channels of *taxation,* or *donated* by individual members of your communities.

When Public Health and Preventive Medicine were twin individuals without hair on their heads, or clothes on their hides, they were almost strangled to death by the medical profession. From all over the country came the cry from professional lips; "kill them or they will kill our business. Don't you know that if you stamp out typhoid fever the very bread and butter will be snatched from our mouths, for typhoids cases long drawn out followed by many complications pay practically all our overhead expenses during most of the year?"

Yet, no such calamity has resulted from the public health and preventive measures instituted during the past twenty years. The twins have survived, and during the World War they fought side by side with every mother's son who faced a bullet or dug ditches under the eagle eye and roaring orders of a top sergeant, and although there was an epidemic of

*Read before the Mississippi State Medical Association, Biloxi, May 12-14, 1925.

influenza which counted out its thousands, and typhus which killed other thousands —typhoid and dysentery, which killed more of our troups in the Spanish War than did Spanish bullets, no where appeared in epidemic form. Today the twins are in their vigorous teens straining for further action, and the medical profession stands back of them for a strong and vigorous manhood.

At the present time, there are three kinds of health agencies in the field of Public Health, in addition to the constituted Health Authorities.

First: The agency endowed by one individual like the International Health Board of the Rockefeller Foundation, the Milbank Memorial Fund and the Commonwealth Fund.

Second: The agencies which conduct health services as an adjunct to business such as the Metropolitan Life Insurance.

Third: That large group of volunteer health agencies which either undertake special types of health work—such as the National Tuberculosis Association — Mental Hygiene—Social Hygiene, etc. or have developed a broader special form of health education program like the National Child Health Association, Child Welfare and the American Red Cross.

This last organization differs from the other groups in that it is chartered by Congress and is listed as a semi-governmental organization.

However, in spite of the multitude of organizations represented in the field of public health, there is one important business for all health agencies—namely:

To establish conditions in all communities that will give every child a chance to be well-born—properly cared for and nourished in infancy, adequately supervised during pre-school days—thoroughly examined throughout the school period—protected from infections of all kinds, with provision for complete prevention and correction of defects in order to give to the community and the country, physically 100 per cent prospective mothers and fathers.

Problems of morals, ethics, and mental are problems to be met in the homes, in the schools, and in the churches. This separation of the physical from the moral immediately puts all disease, whether tuberculosis or syphilis, scarlet fever, or gonorrhea, on the only basis compatible with the physical well being of our community. That is, it designates a disease, as a disease, no matter whether it is the result of an infection of the chest or an affection of the heart—whether it be a sore throat or a pus table.

The War period thrust venereal disease on the public's attention and was responsible for a frank consideration of the physical and medical phases of such illnesses but there is still a vast amount of work to be done in this field before every community will demand that all infections diseases be reported and all infected individuals be isolated until free from contagion.

May I repeat, it is perfectly assinine from a public health point of view to look upon venereal diseases except as a contagious diseases endangering the health and even the lives of every member of the community. Free the consideration of such diseases from the entangling moral and ethical phases of the situation and you will find only one course of action—the application of the usual accepted public health preventive and sanitary measures.

For years, well meaning people and organizations snatched idealistic brands from the heartfires of public health and built raging bonfires of their own with little or no thought of each other, and frequently with little thought for the individual or community which was being good." Yet, in spite of innumerable mistakes, good accrued to the community, for through it all there developed a defin-

ite rational community public health point of view.

In spite of the fact that many people from many communities along with numerous volunteer health agencies still consider such problems as the control of venereal disease, tuberculosis, the promotion of infant hygiene, and child health, as problems to be handled by them without thought of the whole health problem of the entire community, there has gradually developed the only logical idea; "private individuals and volunteer agencies must turn over their public health work to the chosen public health officials as rapidly as the public health departments are financed through normal taxation to do this work effectively.

However, there is one consideration that we must constantly bear in mind. The people who support the public health officials, the people who pay the health officers, state, county, or municipal—are the same people who contribute funds for the support of all volunteer health agencies. The reason I make this statement is that it is a point which is not usually considered. The fact is, most health officials and even many members of a community feel that the National Tuberculosis Association, the Child Health Association, the American Red Cross—are all national organizations that are attempting to superimpose an outside program on the communities concerned, whereas, as a matter of fact, these organization are actually a natural growth within these communities and "head up" in national organizations simply because of the demand for unified action.

One glance at the local officials for example, of all Red Cross chapters in your state, must convince you that the Red Cross is a local organization made up of outstanding individuals who contribute not only to the support of volunteer health agencies, but also give their normal and financial support to the constituted public health authorities and the program which they are conducting.

The only reason for the existence of any volunteer public health agency is the fact that any given community will pay only a fractional part of necessary funds for properly handling public health, but that same community — properly stimulated, aroused by the vision of greater health possibilities—will give three times the amount as an actual donation in order to carry on such phases of health work as infant welfare, prevention of tuberculosis, first aid, and life saving.

There has been a marked advance in the approach to the ideal public health work of this country. During the past eight years for example, the Metropolitan Life Insurance Company conducted a wonderful Tuberculosis Health demonstration in Framingham, and as a result set a standard for any community in attacking the problem of tuberculosis—in actually getting into the homes and into the schools to see that every man, woman and child suffering from tuberculosis receives proper medical and sanitarium treatment. Thus— standards carefully worked out through a period of years should ultimately be standards for every community in handling tuberculosis.

Four years ago, four national organizations, including the American Red Cross, chose Richland County and Mansfield, Ohio, for even a more important demonstration in community health.

Mansfield represents an urban population of about thirty thousand and the rest of the country a rural population of about the same number. The idea was to set in operation a machinery that would develop the finest type of practical Child Health — program including such things as full time county, rural and municipal public health officers, establishing daily inspection of children in schools—not only for detecting contagious disease, but also for the purpose of discovering deformities, and of correcting those deformities through the local medical professional

channels. It included an adequate amount of public health nursing service in order to establish proper prenatal care of mothers and in order to work out infant clinics under local medical groups. Mind you this work was made a part of the community and all agencies in the community were utilized.

As a matter of fact, a vast amount of this work has been conducted in the rural sections, and has been concentrated to meet the demands of over 128 one-room rural school houses where a single teacher may conduct from 25 to 30 classes of all kinds during a day. The great object of this Mansfield Richland County demonstration was to show to all communities of like size what can be done to give children a chance to grow up well and strong, free from inherited or acquired physical defects.

Now the work of the demonstration as such was financed by the American Red Cross for a five year period at a cost of $200,000.00, but that money would be wasted as would the work in the community unless an effort were made to have the community actually take over a reasonable amount of the work through the normal channels of taxation and the constituted health authorities, I am glad to report, that at the end of three years and a half, out of the annual budget of approximately $50,000.00 as set up by the demonstration, Mansfield and Richland County have taken over approximately $40,000.00 and there is now on the field, a full-time county health officer a rural deputy health officer and a municipal director of health.

The public health nursing service has been taken over to a large degree by the local community, and so on down the line, so that the demonstration has not only demonstrated something that is worth while, but it has also educated the local community the point where it is willing to finance the work through normal chanels.

The education of the community in modern public health practices is one of the chief fuctions of volunteer health agencies. I might go on to explain at great length how the Commonwealth fund has financed and is now conducting a similar type of demonstration in Salem, Oregon, in Murfreesboro, Tenn. and Athens, Ga. I might also give much enlightening data in regard to the 20 year demonstrations conducted by the Milbank Memorial group. One rural health demonstration in Cattaraugas County, Ala., and an urban health demonstration in Syracuse, and still a third, on a more magnificent scale, the Bellevue Yorkville District demonstration in Metropolitan, New York, but no adequate conception of the splendid work that is now being done in this field could be given at a meeting of this kind. Get the reports of the work. They are not idealistic. They are not merely sentimental. They dig down to the foundations underlying public health procedure, and give to any community a well worked out scientific basis for the conduct of all health in that community.

Now, may I present for your consideration, the type of service the Red Cross is able to give to a community in co-operation with the health authorities, either local or state.

For a long period preceding the world war, the American Red Cross included public health work among its major activities. This is best illustrated by the following outline:

The Nursing service became a definite entity in December, 1909, under Miss Jane A. Delano, at that time Superintendent of the Army Nurses Corps. Briefly, this service today under Miss Clara Noyes, enrolls nurses primarily as a Reserve of the Army; recommends nurses for the Navy, U. S. Public Health Service Veteran's Bureau, and assigns and supervises nurses in Red Cross educational services, and relief work during disasters in the United States.

The First Aid Service, which is combined with life saving under H. F. Enlows as national director, reaches out into nearly every industry and into the schools, has

been functioning since 1909 under the joint direction of Lieut. M. J. Shields, the originator of First Aid in this country, and Col. Charles Lynch. The object of this service is to promote classes in instruction in First Aid and First Aid contests until every school and industry has been reached. It is believed this constitutes one of the most valuable services to the public in creating a safety sense and in teaching an intelligent handling of injured people until medical aid is secured.

The Life Saving Service became a definite entity in February 1914 under W. E. Longfellow. The aim of this service is to reduce the loss of human life by drowning. It conducts swimming and life saving institutes; teaches rescue and life saving methods. In conducting this work it extends its services to such groups as the Y. M. C. A. Boy Scouts, Girl Scouts and the Army and Navy Training Schools

The Public Health Nursing Service dates back to November, 1912 when it carried the name "towns and country nursing service." Its object is stated as follows:

To be concerned with nursing the sick in rural communities, carrying instruction along sanitary and humanity lines into the homes, to co-operate with all agencies dealing with questions of individual and public health.

Today, there are over 900 Red Cross public health nurses in the field to say nothing of over a thousand who have been taken over by the official health departments as public funds have become available.

This service is now under the direction of Miss Elizabeth Fox who has president of the national organization of public nurses for four years.

Home Hygiene and Care of the Sick developed as a result of a suggestion in 1908 and has continued because of a definite demand. The actual service with text book and director eventuated in 1913. Today this service promotes instructions in preventive measures and home care of the sick in city and rural communities, including schools. It publishes a text book by Delano, and an official guide for Red Cross instructions.

The Nutrition Service developed from classes in food selection in 1908. In 1916 *The National Advisory Committee on Red Cross Dietitian Service* came into being, to set standards for Red Cross enrollment, and to secure Dietitians for Red Cross Commissions overseas. This enrollment today constitutes a reserve from which the Army, the Navy, the U. S. Public Health Service, and the Veteran's Bureau, as well as the Red Cross draw their Nutrition workers. This service consists of an educational program coducted by qualified nutrition workers. It contemplates individual groups and general propaganda instruction in selecting adequate food for prenatal, pre-school, and adult life. The program includes instructions through class work, personal service, and instruction through consultation and home visits. It also includes a conduct of special nutrition classes for malnourished children in close co-operation with the physician.

Civilian Home Service conducts family welfare activities for all members of the community in chapters where no organization exists for that purpose.

Disaster Relief consists of aid rendered sufferers from fires, floods, tornadoes, earthquakes, epidemics, shipwrecks, and other catastrophies. This aid includes medical service the distribution of food, clothing, household furnishings, and financial assistance in the emergency period, and thereafter such help as is essential for adequate rehabilitation of individuals and families on the basis of their needs.

In most disasters in the United States, the American Red Cross is the directing agency in relief work and is designated by the president as the government relief agency.

Examples of work accomplished:

During the fiscal year, July 1, 1923, to June 30, 1924, relief was given in 192 disasters.

At the end of June 30, 1924, 619 Chapters were carrying on authorized Home Service Extension to civilians. An average of 8,425 families were served each month during the year.

During the fiscal year, 13,865 First Aid certificates were issued. The First Aid car traveled approximately 9,646 miles and visited 137 cities where 911 meetings were held, with a total attendance of 147,176. The Life Saving Corps had an active membership of almost 50,000.

A total of 62,706 women and girls were given instruction in Home Hygiene and Care of the Sick during the year, of which 29,082 were school pupils and 19,114 certificates were issued to them.

During the year 5,596,663 children were enrolled in the Junior Red Cross.

On July 1 1924, there were 40,636 nurses enrolled and 916 public health nurses on duty. At the close of the year 2,700 dietitians had been enrolled. During the year Red Cross public health nurses made 1,162,330 home visits, visited nearly 60,000 schools and inspected more than 1,500,000 school children.

Under Volunteer service we have the following statistics: garments made, 164,535; surgical dressings, 1,244,846; Canteen (persons served) 23,854; motor service calls, 13,095; layettes made 1,813.

Of a total of 84,500 ex-service men hospitalized, 63,700 were rendered a definite and specialized service. Approximately 744,220 visits were made to the sick and disabled in Army and Navy hospitals alone.

All this work is thoroughly organized and is under the control of recognized professional groups. Every worker is required to observe in detail the ethics of the nursing, medical and public health professions. These services, in part or as a whole, the American Red Cross offers to every community as a definite part of the community. The American Red Cross stands ready at all times to turn over to public health officers any phase of its work when public funds are available through taxation to conduct that work effectively.

As long as the public donates three times as much to volunteer health agencies as can be extracted from them through normal taxation, just so long is there a field of co-operative effort between these agencies and the constituted public health officials. To educate the public in modern health practices is the chief function of volunteer health agencies. Nowhere in this country is this educational work adequately conducted by the health officials in fact, most health departments have to fight for their very existence in order to get sufficient funds to conduct the barest outline of accepted health practices. When the departments of public health are free from the vicissitude of kaleidoscopic political changes and the public is educated to the point of demand and modern health protection, the public health departments will gain the support they deserve both moral and financial. That day will mark the death of volunteer agencies in the field of health, and the millennial dawn of ideal Public Health Practice.

A MODIFIED McREYNOLDS OPERATION FOR PTERYGIUM.*

ARTHUR WHITMIRE, M. D.,

NEW ORLEANS.

For centuries, surgeons have been interested in pterygium. Taken from the Greek the name Pterygium means a "Little Wing," which had the characteristic and almost constant resemblance to this condition, of a triangular shape with the base beginning at or near the caruncle with its apex at the corneal limbus. Pinguecula is the beginning of a true pterygium which progresses to and forms an attachment to the limbus, slowly advancing across its cornea until the center of the cornea is reached or in some extreme cases the

*Read before the Louisiana State Medical Society, New Orleans, April 21-23, 1925.

growth will even extend beyond the center and by this time the pinguecula has disappeared.

Pterygium generally attacks the nasal or inner angle of the eyeball very rarely the outer. Both eyes often suffer alike. According to Saemich, pterygium is twice as frequent in males as in females. Pterygium becomes quite destructive to the vision when the pupillary area becomes covered and the removal of the growth at this time will improve the vision very little and sometimes not at all. Cyst formations in a pterygium, cases of which have been reported by de Schweintz, de Costa of Lisbon, maintains the possibility of epitheliomatous transformations of the head of the pterygium and describes histological examinations in which two cases showed a distinct epitheliomatous structure. These similar cases are cited from different observers, hence the importance in favor of removal of all pterygia.

The best authors have stated that the active part of a pterygium is at the limbus and that if the portion be carefully removed, and the wound be covered with conjunctivia there will be no true recurrence. It is my humble opinion that after carefully removing all epithelium to which the pterygium is attached, by using the point of a very sharp Graeffe knife and covering the wound completely with conjunctivia, recurrences are greatly reduced. But when we consider that a recurrence is at hand, we have a very different problem to handle on account of the fiable inelastic changes in the scars of the conjunctiva.

A pterygium is either progressive or stationary, both should be operated for cosmetic reasons, undue astigmatism etc., if progressive operation is most urgent. The stationary pterygium may be operated upon, the progressive pterygium must be, and both should be.

According to Fuchs, Arlt himself deserves the credit for having made the operation for pterygium a success by demonstrating the necessity of closing the conjunctival wound.

About 1855 the elder Desmorres devised the method of transplantation for the purpose of diverting the growth from the cornea. Not only was this object accomplished, but it was found that after transplantation, the pterygium atrophied. Demorres' principle was one of great and lasting value and he must ever receive a credit and the royalty given on any transplantation operation for pterygium.

McReynolds' Method.

In 1902 McReynolds of Dallas, Texas, made a very valuable contribution to the surgery of pterygium, although a modification of Desmorres' it has enjoyed great popularity in this country. It is easy of execution, no tissue is removed, unless it is, perhaps the head of a large pterygium, and that is optional, no exposed sclera remains. If well done, recurrence is exceptional. It is applicable for pterygium of any size and it calls for but one stitch.

It is my observation that a modification of this procedure upon the last 67 cases upon whom I have operated is perhaps less liable to relapses, a situation most unattractive to deal with in that the conjunctiva once disturbed, especially following the changes occasioned in pterygium, is less elastic and more friable than in the normal conjunctiva. The desire is to remove the pterygium as far as possible from its attachment thereby preventing its blood vessels, always eager to reach out and re-attach themselves to the denuded surface from whence they came. I endeavored to undermine the *entire nasal half* of conjunctiva *back to the attachment of muscles,* this is very easily done with a strabismus hook and instillation of four per cent cocaine solution anesthesia. Following removal of head of pterygium, incisions are made to separate the conjunctiva from the limbus to the vertical meridian above and below with Graeffe knife. This, when the speculum is removed, affords a sliding of conjunctiva upwards or downwards to a

great extent covering the denuded area with normal conjunctiva which by virtue of its mechanical protection and warmth promotes rapid repair of epithelium, necessitating passing of a probe under the flap daily for one week to prevent adhesions, which sometimes occur. My results have been as far as I could observe better, in that I have noted only two or three relapses, however, more could have happened since many cases are not seen after having been discharged.

As to the sliding of the conjunctiva, there can be no objection since in cases of perforation, and in ulcer of the cornea, we detached at the limbus and undermine the entire conjunctiva back to attachment of muscle without pain or complications, following the closure with purse string suture covering the entire cornea for several days, resulting in rapid repair.

DISCUSSION.

Dr. W. R. Buffington (New Orleans): A pterygium is probably one of the most common conditions with which doctors have to deal. Though comparatively simple, its effective removal is very necessary because of the tendency to recur.

In the sucessful removal of a pterygium three conditions must be fulfilled. First, you must remove the head of the pterygium from the cornea; you must sever all the blood vessels leading into the cornea at the limbus.

Second, you must change the direction of the blood vesels from one which is at right angles to one that is more or less parallel to the cornea. The third is to cover as accurately as possible the denuded sclera. Any operation which fulfills these conditions will be, in a large proportion of cases successful. The operation of choice should be the simplest and the easiest to perform, and the one that has the least amount of surgical trauma.

In the evolution of the McReynolds operation I think we approach more nearly the ideal with a minimum amount of trauma.

First of all, we remove the head of the pterygium from the cornea; we change the course of these blood vessels, by transplanting the pterygium downward, at the same time we bring a flap of healthy conjuctiva over the denuded sclera, a flap with a minimum of blood vessels, the course of which has been diverted from a direction toward the cornea. I am sure Doctor Whitmire's operation is quite successful, but I think that he has complicated the operation, without improving its effectiveness.

In the McReynold's operation, you separate the head from the cornea—you make one other incision and then you transplant the head. In doing this you accomplish the three things I have mentioned. I think it is very necessary to cover the denuded cornea with the flap. When you do the McReynolds' operation as it should be done, a flap will come down to the limbus covering accurately the denudation. You will then have made only one incision in the conjunctiva. The post operative treatment is practically negligible in the McReynolds' operation.

In Doctor Whitmire's for several days afterwards one must keep the conjunctiva separated from the cornea, and therefore I feel that while his is a successful operation, it is not an improvement over the original McReynolds.

Dr. A. Whitmire (closing): In answer to Doctor Buffington's statement that the conjunctiva should come just down to the limbus, we know that in the advanced pterygium extending from 3 to 8 millimeters on the cornea, the epithelium has to be removed with the pterygium. That is, when a pterygium has encroached on the cornea, although it be as much as one third of the way across, you must remove the head and you must take with it the epithelium of the cornea. This modification is especially designed to afford a mechanical action to cover this surface until the epithelium is repaired. When the epithelium is restored there can be no adhesions between the cornea and the pterygium, especially when there is a tendency for a normal conjunctiva to cover the diseased surface. That is the only reason we have for placing the conjunctival flap over the denuded surface. If the pterygium has just reached the limbus, then there is no occasion to cover the cornea with a conjunctiva flap, but in advanced pterygium it is especially efficacious.

THE PURVEYING OF FOOD STUFFS IN LOUISIANA.*

OSCAR DOWLING, M. D.

NEW ORLEANS.

The supervision and control of food stuffs, I need hardly remind you, is one of the most important duties in public

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health work. As I see the problem there are two important factors involved. One of these pertains to the transmission of disease, either directly or indirectly, by contamination; the other to the practice of fraudulent adulteration which though it may not be injurious to health, is at any rate the substitution of a product of inferior quality for one of a higher grade and price and consequently a subversion of honest dealing. Should, on the other hand, these adulterants be of such a nature as to constitute a public danger, adulteration becomes a problem within a problem which we are oftentimes called upon to solve.

So far as the disease transmission is concerned we are all acquainted more or less with the foods which are most easily contaminated and we are especially on the alert to detect contamination where the possibilities are present. Milk is primarily a food product which is most easily contaminated and which requires the greatest vigilance on the part of the health officer. The dairies in Louisiana are continually under supervision, but they are far from being up to a uniform standard. There are a great many derelictions every year which require correction, and I must confess that only with difficulty is it possible to convey the idea of cleanliness to some of the people. It has often appeared strange to me that people apparently prefer a dirty, fly infested dairy to one which is clean and wholesome. Of course I can quite appreciate the expense and loss when a dairyman is required to change his whole method which is often very imperfect and antiquated. The secret of success lies in convincing him that it will cost him less in the long run to put clean, pure milk on the market than it will to market dirty adulterated milk in his cans and battles. Frequently all arguments are futile for the simple reason that the words and advice fall upon a mentality and intelligence which is incapable of imagination. It is often necessary in such cases to resort to force where moral suasion fails to convince.

Probably the dairy inspectors in every state have the same experience; one sees about the same condition of affairs everywhere. The dirty cows, filthy sheds, fly infected milk rooms, uncleanly vessels and a slattern woman or unkempt man with dirty hands taking care of the milk. They will frequently find the foul residue of previous contents still in the can, and yet this individual pours the new milk on top of the old; utterly incapable of distinguishing between dirt and cleanliness. Vigorous inspection, constantly and consistently prosecuted is the only remedy.

During 1924 and January, February and March 1925, 3,590 samples of milk were collected, 409 of which were found adulterated, misbranded or illegal. In two months of this year over 2,300 milk cans were inspected, of which 27 were destroyed. This does not seem very much, but we must recall that the process is continuous throughout the year. There have been eighteen prosecutions during the last few months for some violation of the milk regulations, usually for adulterating with water. Although not infrequently a violation of the Code in the selling of milk below the standard for butter fat or bottling on the street occurs, the old time worn habit of using the hydrant to increase the quantity still seems the favorite method of swindling the public.

When we examine into the psychology of such an individual who thinks he can get by with his moth eaten method, we are driven to conclude that he is either a fool or that he possesses no knowledge of human nature. If he were not a fool he would know that eventually he is bound to be caught. If he had any understanding he would perceive that even the densest mortal would come finally to see that he was being cheated when he used such milk for his morning coffee. And it is just this attitude of the average dairyman that is so difficult to overcome. He resembles the proverbial ostrich in his stupidity.

There is another phase of the protection of the public from contaminated milk which we are trying to effect—the elimination of tuberculous cows from the herds. This is an extremely difficult proposition and the average dairyman used to be even more impervious to reason when he is brought face to face with this regulation than he is when required to be clean. It is true that a great many of the more intelligent ones are perfectly familiar with the tuberculin reaction and know what it means. They, however, will argue that there is no reason why the whole cow should be destroyed because one part of it is diseased. They cannot conceive of the possibility of organisms traveling by way of the blood vessels to the udder, and so long as they do not see any evidence of udder involvement they say why shall we sacrifice the animal.

The more dense and ignorant the dairymen the more opposition will they offer. This, of course, is no exception to the general rule because the unintelligent are notoriously opposed to innovations. Nevertheless we are making good progress in Louisiana with tuberculin testing; during the past fifteen months over 50,000 cows were subjected to it. Of these, 1,191 reacted positively; probably in the neighborhood of twenty or twenty-five thousand cattle will be tested during the remaining months of this year. As a rule we have found that the positive tests have been somewhere between two and three per cent, and these of course have been destroyed.

Unfortunately at the present time there is no provision made for compensating the dairyman for the loss of his cattle, which I understand is done, at least partially, in a number of states, notably in Illinois. In my opinion, the dairyman is justified in claiming a certain indemnity. It means a loss of $40.00 to $50.00 for every animal which he is compelled to sacrifice. At the same time he should, though he is not likely to do so, look upon the whole transaction from an altruistic standpoint and to think of the numbers of innocent children he will be saving from the disability of a bovine tuberculosis infection; dollars and cents, and the provision for his own existence which is not infrequently a meager one, leave no room for charitable thoughts.

We have, however, ample evidence to show that a great many of the dairymen appreciate the necessity for co-operation. They understand what tuberculosis infection means and they know too that they will stand a better chance in the long run of reaping financial success when they can assure their patrons that their cows have all been tested and that the milk is safe.

In spite of the difficulties we are making progress and I think the day will come, nor do I believe that it is far distant, when we shall be able to say that all of the dairy cattle in Louisiana have been weighed in the balance and have not been found wanting.

So much for our milk situation. Another feature of food survey is the comparatively recent control of our bottling factories. Since the Volstead act there has been a great tendency to adulterate the soft drinks in one way or another. Usually, the adulteration has been one which attempted to cut down the cost of the constituent which is most necessary, the sugar, and to substitute saccharine. 98 samples of beverages were examined during the months of February and March 1925 and 38 were found either adulterated or misbranded or in some other way illegally sold. In a way this seems to be rather a high percentage, but at least it indicates to us and especially to those to whom this matter is forcibly brought home that the latter are not treading the path of virtue as they should.

The inspections of fruit, especially citrus fruits, have been consistently carried on and a great deal of material not up to

the standard has been destroyed. While there is hardly any doubt that unripe or spoiled fruit may cause gastro-intestinal disturbances of a mild type there is very little reason to apprehend that it will convey any special disease. There is nothing in unripe fruit of a toxic nature; any disturbance which occurs is probably due to the fact that the acid, either citric, tartaric, maleic, malic, butyric, valerianic and possibly other acids have not been converted into salts or changed into other products. Sometimes though there is reason to believe that in many unripe fruits there exist glucosides which may possibly exert a mild toxic action. Such at least is true of the grape fruit, which contains besides citric acid quite an appreciable amount of a substance called narigin. This is a white crystalline glucocide intensely bitter, and if taken in large quantities acts as an intestinal irritant. It may be that this substance is present in unripe fruis both in the pulp and in the rind. It apparently disappears to a great extent in the pulp at least after the fruit has ripened.

Spoiled fruit of course constitutes a fraudulent violation of the regulations which is more in opposition to the principles of economics than it is contrary to public health rules. It is true that spoiled fruit when taken into the stomach may cause intestinal disturbances and the reason for this is probably due to the fact that moulds and fungi produce products of fermentation within the pulp which act as toxins. Many of the dealers of course try to save their losses by resorting to substitutes and for this reason we must continually be on the lookout. Even they are beginning to appreciate that if they require the proper handling and the proper packing of perishable goods that they will be able to save themselves endless trouble and annoyance and perhaps also financial loss.

Our meat inspection at the present time is not satisfactory. In the larger cities this is under the jurisdiction of the City Board of Health and to judge from the conditions of many markets there is every opportunity for fly borne infection of two distinct types. You should realize that flies may not only carry organisms, but that they will if offered the opportunity deposit their ova upon the exposed meat and vegetables. Such is notably the case with the species Lucillia caesar, the Sarcophagidae and Fannia canicularis to which have been ascribed more cases of intestinal myiasis than to any other species. Its larvae are generally bred in foul vegetable and animal matter and necessarily will be found very closely associated with the meat stalls.

In our markets there have been detected so far eleven families of flies which include fifty-four species under thirty-nine genera. Among these was also found the fly Eristalis tenax which produces the so-called "mouse tail" larva and also intestinal infection. Quite recently in the Journal of the American Medical Association a case of infection with this fly larva was reported.

We have also noted an incident of infection of the kidneys by the larvae of a wingless fly belonging to the genus Puliciphora. This was evidently contracted while eating shrimp which had been exposed.

I think this is sufficient to indicate to you that there are other dangers besides the transmission of bacteria that exposed meats and vegetables can be responsible for. Flies themselves are not only filthy, but they are a distinct danger because they readily transmit paratyphoid, typhoid, dysentery, streptococci and whatever other organisms may be involved in intestinal infections. I have no doubt that many fatal dysenteries f infancy, even those traceable to milk, are ultimately fly borne diseases. Flies in markets deserve more thorough study by trained entomologists, but above all things the manner of suppressing them should be forcibly

brought home to the occupants of meat and vegetable stalls in the public markets. This can only be done when we know the mode and season for breeding which is by no means the same for all fly species or even genera.

There is one other article of food which demands our attention because of its potentialities as a disease carrier. This is the oyster. A live oyster may figuratively contract typhoid when the sewage of a water course is allowed to flow into the breeding grounds. Wholesale contamination of an oyster bed is not unknown. Incidences have occurred off the coasts of New York, New Jersey and Massachusetts where the oysters which have been harvested were found heavily infected with colon bacilli which opens up the possibility of typhoid contamination as well. This was notably the case in 1921 when the completion of the Passaic Valley project allowed three million gallons of sewage to be poured daily into New York harbor. It was held that the direct marketing of oysters coming from Raritan Bay would have to be prohibited on this account.

Precautions taken at that time were the result of lessons learned in epidemics of typhoid fever directly traceable to this form of pollution. The New York State Conservation Commission co-operating with the New York Health Department and the Federal Department of Agriculture as well as with the U. S. Public Health Service, however, demonstrated that it was possible to reduce the contamination by the judicious use of chlorine. A new contamination of the oyster supply has apparently occurred, for Dr. Bundesen in a recent number of the Journal, reports something like sixty-five cases directly traceable to blue points harvested in this Bay.

The oyster beds of Louisiana are fortunately almost all safe. It is a well known fact that oysters require a certain concentration of salt, that is, there must be a reasonable admixture of sea and fresh water for the optimum development bith of size and of flavor. The fresh water element which oysters demand frequently implies sewage contamination. Heretofore we have not heard of any cases of typhoid that we could trace directly to the contamination of oysters. It should, though, be borne in mind that with us the oyster is generally eaten from its shell and that aside from the single chance of contamination in the bed itself the animal is not exposed unless it be to the knife of the opener at the oyster counter. It is a different proposition when the oysters are shucked; the chances of contamination are necessarily greater. Fortunately with us shucked oysters play but an insignificant role.

The blue points which are responsible for the Chicago epidemic were all shucked and could be traced not only to Raritan Bay but to a shipper in New York. though there is nothing to signify that the shipper or his employees were responsible. The dealer in Chicago could be excluded. It would seem that the oysters were originally infected at the beds and that the shucking which kills them and the subsequent storage led to enormous proliferation of the typhoid organism in the juice.

The present condition of our shucking plants leaves much to be desired from the sanitary angle, and we should not be surprised some day to hear of an epidemic of typhoid at the points of destination traceable to Louisiana shucked oysters. The unshucked oysters have shown excellent tests in a recent survey made in conjunction with the Louisiana Department of Conservation; shucked oysters, however, have shown a considerably higher score. Some scores have been in the neighborhood of 500 and some as low as 3 or 4. As I recall, a score of 320 was regarded as a good margin of safety in the investigation already referred to.

I cannot close my paper without referring to another source of danger to which the

public is unknowingly exposed and of which we have been able to detect at least one excellent example. This is the possibility of arsenical poisoning by vegetables which have been sprayed either for the purpose of destroying ova or larvae of parasites. As a rule the materials used in the sprays are innocuous. Occasionally arsenical compounds are employed. These may be the very soluble sodium arsenite or the less soluble acetoarsenite of copper, commonly termed paris green. Very minute quantities of arsenic are sufficient to destroy almost all forms of parasites, especially the larvae of moths which lay their eggs in cabbage tops or at the roots or in the stalks of vegetables. These vegetables, however, may retain sufficient arsenic to become a real element of danger to the consumer. Even very small quantities of the arsenites occasion distressing gastro-intestinal, liver and kidney irritation in susceptible people; they may even be fatal to weak children.

We have been successful in preventing a car load of celery contaminated in this manner from being sold to the public. As soon as it was determined that the celery was unsuitable for consumption, the carload was destroyed. It is very regrettable that incidents of this sort occur. It means a great wastage of material to the shipper and at the same time it represents a disdinct loss to the consuming public. The whole reason is to be sought and found in the ignorance of the producer. Again we are compelled to revert to the original interpretation of most of our evils: the stupidity and lack of intelligence or wilful negligence on the part of the producer. This in turn is to be sought partly at least in the struggle for existence and the lack of education so that after all he is not always entirely to blame for it.

It is a hackneyed phrase that "times change and people with them," but it contains both substance and truth. The day will come when everybody will be enlightened as we are now in the methods of preventing disease, and furthermore the more intelligent they become the more amenable they will be to rules and regulations which we devise for their protection. The schools of the future are bound to revolutionize the attitude of the general public toward the health measures if they do their duty as they should. They will make better citizens because they will teach health and the healthy, instructed citizen will not present the attitude of opposition which he now offers to many of our attempts to keep him in the straight and narrow path.

DISCUSSION.

Dr. J. M. Kittrell (Laurel): We should appreciate the paper we have just heard because just at this time the attention of the State of Mississippi is turning more to the question of food protection than ever before. This paper contains many valuable suggestions and much information that can well be put into practice in our own state. It would be a case of carrying coals to Newcastle if I attempted in any way to elaborate or to add to the ideas and words of the paper. I shall therefore attempt merely to reiterate some of the points he has brought out and to make a few suggestions as to how they might be applied in this state.

To begin with, right here in Mississippi, as well as in Louisiana, we oftentimes encounter peculiar psychology, not of the producer, but of the consumer, toward the question of pure food. To borrow an idea from one of our own public health workers, we have too many people who seem to relish the flavor of filth.

Another matter which I would like to call to your attention is the order in which various questions are handled. Unfortunately, most of our health departments, on account of finances and personnel, cannot take up all of the problems that a full time department could handle, and in my humble opinion the most necessary requisite for a successful health department is to be able properly to evaluate the various lines which it might incorporate into its program. Oftentimes such decisions are rashly made, something is just half started, and of course is not successfully carried out, while something perhaps more important is neglected. I know of a nice little hill town in Mississippi, which last year spent $2,100 for meat inspection, but not a cent for milk inspection, and their milk supply was rotten. When I approached them on this subject they said that was something the people wanted, and this line of thought brings us to one conclusion, and that is that the whole

proposition of the health worker and the activities of the private practitioner is essentially educational.

Dr. D. J. Williams (Gulfport): I wish to thank Dr. Dowling for his criticism of the unsanitary conditions that he may have found in Biloxi. I might explain that he may have been served spoiled food, because of the fact that the restaurant people supposed he was used to that kind of food in New Orleans.

I shall refer briefly to the matter of meat inspection; locally and nationally meat inspection is inadequate. It has been my pleasure to visit recently one of the large slaughter houses of this country in a city of over 200,000 people, there I saw carcasses being prepared for shipment where the lungs and intestines showed tuberculous lesions, and still this meat was stamped and shipped out and the poor fellow receiving this stuff received it in good faith, thinking that the stamp of the national inspectors is adequate and affords protection. It is my opinion that it is not a sufficient guarantee of wholesome meat. In our local slaughter houses, inspection is equally inadequate and I will say to Dr. Kittrell that where that $2,100 was spent in one of his cities, the people probably did not receive 21c worth of protection. Very few inspections are made with the view of discovering parasites, and when they are discovered, that part of the carcass is condemned and they give you the balance to eat. Six years ago the principal meat supply of this county was from Florida, and of inferior quality. We succeeded in getting a better meat supply by encouraging one or two of our markets to handle first class meat. Our milk supply is rotten and when we get after the dairies, we get no milk at all. We had one man in court for supplying low grade milk. He immediately began shipping his milk to New Orleans where it could be pasteurized. Last winter we had an epidemic of typhoid fever within five blocks of where we are here in Biloxi. Within this densely populated area, there was a dairy that had been under suspicion for some time, but we could not get the dairyman to move his dairy. One of Biloxi's citizens made a tour of the interior and came back with typhoid fever. He lives within a block of this dairy, and there are 200 or more pit toilets in this area. We have 10,500 of them in this county, so that it is impossible to look after all of them. It so happened that the pit toilet of this man that had typhoid fever was out of condition, it was not fly proof. This dairyman had kept the flies from his dairy pretty well, so that we could not prosecute him, but the flies got into his milk room and we had seven cases of typhoid fever within two weeks in Biloxi. Each victim consumed milk from this dairy. The dairyman himself contracted typhoid fever and very nearly died.

Now as to shellfish—I wish the entire Association of canners of fish were here to hear what I have to say. The situation in Mississippi and Louisiana with regard to oysters is awful. In the majority of instances when you buy oysters they are not safe to eat, because they are shucked under unsanitary conditions.

With reference to fruit, I had some of that bitter grapefruit on my own table this morning. Fruit inspection is an interstate problem. The Federal Pure Food Department should see that all fruit offered for sale in interstate trade is mature and wholesome. We are not eating enough fruit because of the high prices and poor quality. Proper Federal and local inspection will provide us with better fruit at much cheaper prices. The only way to do is to make trade conditions so difficult for the unsanitary food handlers that they will have to get out of business—that is the only salvation. Then let each and every man report to the Health Department every unsanitary condition in the county and you will be doing your part.

Dr. Oscar Dowling (closing): Doctor Williams is right about conditions being bad in New Orleans in many respects. Not long ago a new market was opened and I bought some meat and took occasion to tell the man that I represented the State Board of Health. I sent the meat home and when I got home my wife asked me what in the world I meant by sending that sort of meat. I looked at it and I am sorry to tell you that it was unfit for human consumption. I sent it back, giving the reason, but I have never had an opportunity to go into that section of the city to make a second inspection. I think Doctor Kittrell is right that people will pay for what they want, and when those people wanted meat inspection they were willing to pay for it. When the people demand better milk and better fruit, it will be forthcoming. As far as meat inspection goes, it cannot be relied on. I watched two inspectors working, the Federal inspector and the city inspector, and the city inspector came along and when he saw the stamp of the Federal inspector he immediately placed his below it without ever looking at the meat. It seems to me a waste of money to have that man doing that work—how much better it would be to use that money for some other purpose.

The markets in New Orleans are now before the courts and on the 18th of of this month it will be determined whether or not the markets

are to be reconstructed and made sanitary or what disposition is to be made of them. We have been fighting for this since 1911. I hope they will be put in good condition and that when you go to New Orleans again or to any other part of Louisiana, you will find excellent conditions. Let us all join hands and work together for higher health standards, cleaner conditions for the handling of food, better and more wholesome food, and then perhaps we will all live to be at least 100 years of age.

THE HETEROPHORIAS: ETIOLOGY AND TREATMENT*

Preliminary Report.

By ROY CARL YOUNG, M. D.

SHREVEPORT, LA.

In choosing Heterophoria or muscle imbalance for the title of my paper I realize I have chosen a subject about which much has been said and many theories advanced as to the cause. It is certain, however, that all cases cannot be asitisfactorily explained by any of these theories, and for that reason it would be well for us to study each case individually and not the class as a whole especially since so many eminent ophthalmologists are not in accord.

It would be to our ultimate advantage to believe that this condition can be caused by several more common etiological factors than have been advocated, and from this line and correct any and every abnormality found present in patients suffering from Heterophoria and study the end results.

Heterophoria, according to Ballantyne is the term applied to the condition characterized by faulty postures of the eyes, normally latent, but rendered manifest by the temporary suspension of binocular vision.

A review of the literature will show the divergence of opinions expresed as to the cause or causes of the above condition. According to Barnes, heterophoria may be regarded as a form of neurasthenia. Fox states, "Factors necessary to cause a more or less constant Heterophoria to assume a pathological significance are conditions which devitalize the muscles and nerves in general, and under this fatigue and exhaustion in general; and then fatigue and exhaustion of the eye muscles from over work and the presence of an insufficiently corected ametropia, anemia, nervous prostration, malaria, influenza diphtheria, etc., and similar disturbances." He further states that faulty attachment of the muscles and congenitally weak muscles may cause heterophoria but it is doubtful. Lancaster's theory is that it is due to improper nervous control or co-ordination of the eye muscles. The "All or Nothing" theory that he speaks of regarding a nervous impulse and muscle fiber contraction is an accepted fact which has been proven by physiologists. Savage's theory is that heterophoria is caused from lack of tone. Stevens advances a theory that the cause of heterophoria is found in the vertical meridians of the retina and that these *declinations* depend on orbital peculiarities, such as tendon insertions etc.

Most of these theories advanced, in my opinion, have explained how heterophoria can result from a mechanical standpoint by lack of muscle tone, improper co-ordination, muscle spasm, nerve fatigue etc., but no one with the exception of Fox has attempted to say what causes these changes which in turn result in phorias. I concur, to a large extent, to the views expressed by Fox but believe that we should go still further. A man limps because one leg is shorter than the other, but what caused that shortness? Is it the result of an old fracture, a tuberculosis hip or some other condition? I assume this attitude in attempting to trace the causes of this condition and, from my study of these cases, I am of the firm conviction that we may place the etiological entities under two great heads:

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*Read before the Louisiana State Medical Society, New Orleans, April 21-23, 1925.

(1) Congenital.
(2) Acquired.

The Congenital may be subdivided into:

(a) Improper attachment.
(b) Congenital ametropes.
(c) Inherent protoplasmic deficiencies.

The Acquired comprise:

(a) Refractive errors.
(b) Infections.
(c) Overwork.
(d) Intoxications.
(e) Age.

Under the congenital causes, those showing faculty attachments, for instance if examined carefully would show other morphological stigmata, such as highly arched palates, etc. Those with inherent protoplasmic deficiencies will exhibit certain psychoneurotic and neurotic tendencies on careful neurological examination. Others belong to that great class of hypoplastics suffering from some viseroptosis and so on.

In discussing the acquired causes: (a) Refractive errors cause a large percentage of. the lower amounts of this condition. A refractive error or an improperly corrected refractive error will often produce various amounts of Heterophoria. This type is undoubtedly due to the strain on the accommodation and the convergence which results in fatigue of the structures involved, and a thorough refraction will relieve this condition. (b) Infections.—This comprises tuberculosis, syphilis, influenza and all of the acute and chronic infectious diseases, but the conditions that I especially desire to call attention to are the focal infections and in particular those of the sinuses, tonsils and teeth. Although the last three named are most frequent and important, we should not forget infections of the abdominal viscera and pelvic organs. (c) Overwork. The heterophoria resulting from this condition is only an ocular manifestation accompanying a general fatigue of the whole body. (d) Intoxication. Chronic intestinal toxemia is the most usual, but we must be on the lookout for nephritis accompanied by high blood pressure, diabetes, hyperthyroidism etc. This class furnishes a comparatively small percentage of the cases. (e) Age. Peter calls attention to a class seen from the age of forty-five up which shows exophoria," and termed by him "accommodating exophoria." I have had a few of these cases in whom no other cause could be found and hence I feel that they are due to the catabolic changes of advancing age. Just why this condition occurs in some and not in others, I am unable to say, except that it is due perhaps to certain peculiarities of the makeup of these individuals.

In a series of one hundred and seventy two cases of heterophoria studied by me the following were found:

(a) 85 cases were due to refractive errors.

(b) 53 cases showed definite pathology in the ear, nose or throat.

(c) 13 cases were classed as being due to the changes of advancing age, or as Peter calls it, "Accommodative Exophoria."

(d) 5 cases were psychoneurotics, diagnosed by the neurologist.

(e) 4 cases showed infected teeth.

(f) cases were chronic intestinal toxemias.

(g) 33 cases were definitely tuberculous.

(h) 3 cases had infected teeth and tonsils.

(i) 2 cases were nephritics.

(j) 1 case was an epileptic.

It was interesting to note that in those cases of Heterophoria requiring a nasal or sinus operation the condition usually increased from 3 to 8 P. Ds. after the operation, and that unded the proper exercises this condition remedies itself so as not to cause symptoms.

Diagnosis: A careful history of the patient is of the greatest importance; especially regarding the ear, nose, throat and teeth. Patients are often prone to make light of their case and do not attach much importance to the questions asked. The ocular history should be taken painstakingly and in detail. A thorough preliminary examination should be made including the accommodation near points of each eye with the range of accommodation.

The convergence near point should also be taken. Cover test and tests of ocular movements may not give any definite information but they are just links in the chain. The muscle balance test for distance, and for near, at 13 inches or thereabouts should be made. I consider the near point test of far more value than the test at 20 feet, as patients often show no muscle imbalance or only 3 or 4 degrees of exophoria or esophoria for distance while for near they will show larger amounts of exophoria, even as high as 15 or 20 degrees, or again may show esphoria for distance with a marked exophoria for near.

Following the preliminary examination, if I am at all doubtful concerning the ears, nose, throat or teeth, I refer these patients to the specialists in this line before proceeding further. Should a condition such as nephritis or a neurosis be suspected, I proceed with the refraction and then refer the patients to the internist or neurologist.

The treatment may be considered to consist of:

(a) Nonsurgical.
(b) Surgical.

Nonsurgical treatment: After a knowledge of the general condition is acquired, the refraction is done under a cycloplegic unless the subject is a presbyope. The strongest glass that can be worn is prescribed, cutting the spherical but never the cylindrical corrections. Prisms should be prescribed only in certain selected cases. In hyperphoria they are very usefull and usually give good results when combined with other measures. In exophoria, with the exception of the so-called "Accommodative Exophoria" in which I do prescribe only for near work; I see no reason to prescribe prisms. If the cause is removed, the patient put on the proper exersises and properly treated, we can do without them. Muscle exercises: The pencil pointing exercise is the most simple and if carried out properly, will give good results. General treatment: These patients should be put in the best possible condition and instructed along these lines. It is good to advise these patients to undergo a semi-annual general physical examination by a competent internist. Cases of esophoria I usually refer to the neurologist for an examination to rule out vagotonia or allied conditions. The cases of esophoria are given doses of 1-40 grain of strychnine sulphate three times a day.

Surgical treatment: This consists of an operation and the type is left to the judgment of the surgeon, but it should not be resorted to until certain that the condition will not and cannot be remedied by other means.

CONCLUSIONS.

(1) Tests for heterophoria for distance and near should be done routinely in every case of refraction.

(2) Heterophoria can be secondary to pathology in other parts of the body.

(3) This pathology when corrected often results in a relief of this condition.

(4) If no other pathology is found, then and then only can we say it is congenital.

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DISCUSSION.

Dr. Marcus Feingold (New Orleans): Heterophoria is one of the many affections in ophthalmology about which we know the symptoms, the discomforts, and even the treatment very much

better than we know the cause. The reason for our lack of knowledge of the cause of heterophorias is comparatively simple. The defect producing the lack of balance is so slight that no anatomic cause can be found, and a distinct heterophoria, well observed during life time according to all the rules of ophthalmology, will on a thorough anatomic study, show nothing to explain it. We must assume then there must be something underlying which is beyond our prese t ways of exact determnation. And similar conditions exist in other directions. We are all born with biceps, triceps, deltoid and the many other muscles, but not all of us are expert tennis players, not all of us can equal Babe Ruth, and all of us do not even write alike. That means that, while all of us are provided with the same number of muscles, these muscles do not function the same way in all of us, and the complete and finer control of these muscles is not the same in all of us. The conclusions then must be that the heterophorias are based not so much on anatomic as on some peculiar constitutional, protoplasmic disturbances of the nerves and muscles which control the correct muscular balance of the eyes. Because we find an error of refraction, because we find tuberculosis in the patient, because we find him having some nose and throat trouble, or some abdominal condition, does not follow that these conditions are the cause of the terophria (heterophorias). It is much easier to assume that a muscular equilibrium which is just on the borderline of perfection will be destroyed by the slightest disturbance, general or local. Thus, general disease, fever, loss of weight, loss of sleep, or errors of refraction and so forth, having produced a greater drain on the neuromuscular apparatus, will destroy the small amount of reserve power which was necessary, because of a slight congenital defect, to maintain the normal balance. This additional drain bankrupts the patient; his muscular balance has gone because he has lost the reserve force that just kept him in proper equilibrium.

There exists though a physiological heterophoria, the so-called accommodative exophoria of advanced age. In all older people without exception, if we examine them carefully enough, and slowly enough, an exophoria ranging from 8 to 15 to 20 diopters of weakness of convergence can be found. I cannot help thinking—and in Tennessee I might not dare to stress what I am about to say right now—that the binocular action of the muscles, especially the function of convergence is, phylogenetically, a rather young acquisition of the human race, and for that reason one of the first functions that gives way. The exophoria of advanced age may therefore be looked upon as a neuromuscular weakness because advancing age is diminishing the tonicity of muscles and of nerves necessary for the proper balance. I do not mean to assert that there are no acquired heterophorias. Some heterophorias are apparently the last stages of a healing paralysis of the muscles; others are the result of inflammations, affections of adjoining sinuses, tumors, etc.

To sum up: The heterophorias seem to be based on congenital defects in the neuromuscular apparatus; these defects are ordinarily overcome by reserve energy and become more or less manifest when some external factor comes in, destroying the small existing margin of control.

As to treatment, I must agree with every point made by Dr. Young. Put the patient in excellent condition physically, make him sleep well, let him stop worrying; above all, let him not worry about his eye, give him correct glasses; order pencil exercises; by no means operate; be sparing with prisms, and many of these patients will be benefitted.

Dr. Henry Blum (New Orleans): I would much prefer in so short a time allotted to one for discussion to take up the treatment of heterophoria rather than its etiology, because this can be done more satisfactorily in a short time.

It has been my custom in case of hyperphoria to correct the full error by prisms, and I believe that this is the recognized practice today. It is generally taught that in these latent deviations the hyperphorias are more responsible for the symptoms than are the esophorias or exophorias. Whereas in exophoria or esophoria a correction of only a small amount of error will sometimes give some measure of relief, in hyperphoria it is necessary to correct the entire amount where the deviation does not exceed several prism diopters.

It must be understood that we are not now discussing tropias, but only phorias. In cases of esophoria it has been my custom to prescribe as high a plus sphere as is consistent with good vision, and, in exophoria, as weak a plus sphere as is consistent with the comfort of the patient. I do not like to prescribe prisms in these conditions since I believe that their use will only exaggerate the condition, and especially is this true of esophoria. In exophoria I use convergence exercises and exercises for prism convergence, together with a muscle exercise which I learned from Dr. Reber many years ago. This latter consists of having the patient move his head directly toward an object straight ahead, and then without moving his head to look to the

extreme left of the field, and then straight ahead, then in the same manner to the extreme right of the field, and so on until the exercises have been repeated 15 or 16 times, two or three times a day.

I do not know what the experience of most men is in regard to prism exercise and muscle exercise, but in my own practice I have found it difficult to get patients to carry out the procedure for a long enough time to accomplish much good. After a few days of these exercises the patient feels better, and the exercises will be given up.

Doctor Oliver told me many years ago while working in his clinic at the Will's Eye Hospital, that in his opinion most of the phorias could be corrected by proper refraction, and he did not place much emphasis upon the need of further treatment.

In regard to the recognition and the treatment of heterophoria it is a singular fact that in the practice of some ophthalmologists a great deal of emphasis, or stress, is placed upon this subject, whereas other men equally as competent consider the subject of only secondary importance.

Dr. Duane, of New York, who is possibly one of the greatest living authorities on the study of extraocular muscles, never fails to give each feature of this work very exhaustive study. I spent one month in his office many years ago, and I have seen him devote an hour or more working out this question of muscle imbalance, I went directly from his office to Philadelphia, and worked several months with Doctor Oliver, now dead, who was one of the greatest ophthalmologists. I have already given you Doctor Oliver's opinion on the subject.

Every one who has practiced ophthalmology for many years, and who has given any thought to the subject must have arrived at some conclusion in regard to it, as exemplified by his practice. I believe that aside from cases of hyperphoria and exaggerated cases of exophoria and esophoria, these errors are not of high importance. I do not know whether my opinion is like that of other men present, or whether it differs from it, but I believe that if the refractive errors are properly corrected and corrective lenses properly adjusted, distal and neighborhood causes of asthenopia recognized and corrected, that there will not be much need for the correction of minor degrees of heterophoria, always, however, excepting cases of hyperphoria which should be corrected by prisms.

Dr. H. Dickson Bruns (New Orleans): I will not in the few minutes allowed go over what has been so well expressed by those who have preceded me, but rather will point out where I differ from some of the opinion you have already heard.

In the first place, I shall not say anything of phorias epending upon general conditions of ill health. We are supposed to be doctors as well as eye men, and when we see a person is sick we will not concern ourselves with some little muscular defects; we will attend to foci of infection, diseased sinuses, etc., first. But take a man in whom you can find nothing wrong, yet in working out his refraction you find a defect in muscle balance. I believe if it is an ordinary esophoria it has no importance. Esophoria is coming to be more and more a natural condition of civilized man by reason of the constant use of his eyes for near work. Nearly every man in ordinary good health who has not myopia will have an esophoria. So if it is a matter of 4 to 6 degrees, or perhaps more, you give him correcting lenses and he is comfortable. Exophoria is a different matter.

As to the treatment, I believe prisms play a very important part and the most important part if we exclude the advancements by tacking or shortening of the tendons. In the vertical imbalances, everyone agrees we have to use prisms because we cannot get away from them. If a man has moderate vertical imbalance that gives him headache and various other nervous symptoms, he can be made comfortable by prisms.

You must give them to him or operate, and operations should be avoided in moderate degrees. I think it is just as logical as to give him prisms to help his exophoria as to give him his hypermetropia. Why do we give convex glasses to a man? Because his ciliary muscle is not able to keep up the continuous contraction that enables him to focus objects on his retina. If his internal recti are not sufficiently strong to keep both eyes constantly pointed (comfortably) at a certain point in space, why should it be illogical to assist him with a prism? The chief point I want to make is this: Do not give him full strength prisms, give him a prism one or two degrees maybe more below the degree of his exophoria, so that he will make constant effort at fusion. In that way the weak muscles are constantly exercised and I believe you help him. In most cases of vertical imbalance it is better to give a prism just sufficient to relieve the symptoms and not fully correct the phoria for the same reason. You will find his muscles will usually improve in strength.

It is an advantage that every case becomes an experiment as each case to which you give comfort and relief confirms your judgment. If they are relieved your theory is evidently incorrect.

As to exercises with prisms—prism practice in my experience has been that we can sometimes get complete relief of symptoms by teaching patients in this way how to innervate the eyes correctly, although the phoria measures constantly the same. They have no better muscle balance, but they have learned how to manage their eyes. I have seen a few cases where such gymnastics relieved the phoria, but I believe they are exceedingly rare.

Dr. Pope W. Oden (Shreveport, La.): There are too many cases of this kind that are treated by the eye men for these conditions and given corrections without looking into the causes.

I have been working in conjunction with Dr. Young on these cases, and we have found that cases suffering from sinus, teeth, tonsils, and other conditions, clear up and are relieved of their muscular imbalance after the exciting cause is removed without any prism correction. As Dr. Bruns has said, eliminate the cause and you will eliminate the conditions.

Another point is that too many men depend upon X-ray findings for a diagnosis, but you can have a focus of infection in the sinuses or nose that will not give you a shadow, hence depend on your clinical findings. It is possible to have hypertrophied turbinates or a beginning polypoid degeneration with low grade infection in which you have enough absorption to cause this muscle imbalance. As brought out in the paper, quite a number of these muscular imbalance cases have been completely relieved by operative procedure upon the sinuses, tonsils, etc. These patients have been complaining of headaches, and the headaches are relieved in proportion to the muscle imbalance. I am not prepared to give percentages but hope to do so later on.

Dr. Roy Carl Young (closing): First, I want to thank the gentlemen for their discussions. Dr. Feingold brought out the difference in muscle power of the eyes in different individuals. I agree with Dr. Feingold on that. One man may have more power to do eye work than another man. But one may have a foci of infection in the teeth or tonsils or some other condition that will make the eye muscles weaken and use up the reserve power spoken of by him. Remove the cause, put on the proper refraction and the condition clears up.

I agree with what Dr. Bruns has to say in regard to the present day methods of using our eyes. We are continually accommodating and converging because we are doing more of that kind of work. That is what brings to us more of these cases than we used to see.

When we examine a case and find anything suspicious of an infection or any other pathology, we immediately go into it and find out all about it. We are doctors first and ophthalmologists second, and it is up to us to give good results, and the only way we can do this is by eliminating any contributory factor that may be present in the case. When we get a case of exophoria of 15 to 20 degrees, you look into the case and find an infected ethmoid, or bad tonsils, and remove the cause, and then give the patient proper treatment, and that patient comes back with a perfect muscle balance or with only one or two degrees of exophoria, you cannot help but believe that the focus of infection was a contributory cause. At a later date I intend to prepare a secondary report which I hope to present before the society.

ORGANIZATION AND OPERATION OF A CITY HEALTH DEPARTMENT*.

J. J. DURRETT, M. D.,

MEMPHIS, TENN.

I believe that an official local health department should embrace within its activities work on all important health problems which the community presents. The work done should be adequate, and it should be distributed between the various health problems on the basis of the importance of the beneficial results which might reasonably be expected to accrue from the effort put forth. Where all health problems are not embraced within the scope of the department's work, or where the work is inadequate, or improperly distributed, organization is incomplete, and smooth, efficient co-operation with other agencies can not be had with that natural ease essential to the greatest success.

The advice and efforts of federal, state and voluntary health agencies as well as all interested local groups or individuals should be directed toward securing a well balanced department adequately supported financially and morally. When this is accomplished, the department should be vested with the duty of leadership and

*Read before the Mississippi State Medical Association, Biloxi, May 12-14, 1925.

responsibility for all local health work done in the community. Any interest which subscribes to this plan should be encouraged, informed and set to work attending first to its private health problems and second to supporting community health work.

Any latent interest, antagonistic to this plan of health work, lurking in any individual or group, should be allowed to remain latent. When opposition persists it should not be ignored. Generally speaking, the attention given it should not be denunciatory and nothing more. A good plan is to rub its delicate, flimsy shins, ignorance and prejudice, firmly, persistently and dispassionately with a hard rough brick of facts, which will either cause withdrawal from the contact or the wearing will render them no longer capable of supporting the opposition.

Voluntary health agencies at work on specific problems should transfer their activities as soon as the governmental agency is able to receive them and continue the work with efficiency. In giving over its work, the agency's interest in the work transferred should not cease. Established operating organizations with such broad minds are not always met with. The clash of ideas and personalities and the magnifying of small unimportant details are all too frequent when changes such as these are contemplated or are in process of accomplishment.

It is as important for health departments to confine their activities to health work as it is to extend their activities to the entire health field. Medical relief should be left to hospitals. Welfare and social service work and moral and religious reforms should be left to their proper agencies, and most of health education to departments of education. Each agency should be made to see its public health opportunity and duty and should be assisted, if need be, to secure the information and means necessary to perform this duty. Departments of health can be of great assistance in this.

Health departments cooperating with hospitals, might lead the latter to see and enter a wider field of community service if they feel certain that the department of health is not interested in encroaching upon medical relief. The same holds true for welfare and social service work and reform movements.

Departments of education will leave school medical inspection to departments of health where they are sure that routine school procedure will be benefitted and not interferred with by such action. Their proper business is education. It would be regarded as absurd if some official or unofficial agency other than the department of education should undertake to teach all of the writing needed by a community. It is more than possible that the same is true of health education here. Certainly, departments of health will have done their most effective health education when they have performed well, while handling health problems which confront them. This is the only good base from which to launch easily and safely health propaganda and publicity. Through these we reach a part of the public, but as a rule, it is that part best informed and least in need of health information. All too frequently health propaganda and publicity are accepted as health education which is true only to a slight degree.

It is hardly true that a special system of pedagogic methods is required successfully to teach health to children. The greatest obstacle to adequate health education in our schools lies in the fact that teachers are lacking in health information. The universities, colleges and normal schools, where teachers are trained, should recognize this deficiency and remedy it. Departments of health might, through special courses to teachers, temporarily and partly remedy this while the proper training institutions are neglecting this duty for one cause or another. Studying health affords

facts for mental training as well as useful information applicable to our daily regime.

Proper relationship with the above and other agencies can be built in no way except through mutual confidence, which will arise only when effective procedure, honesty of purpose and fair dealing are employed.

There is too little honest co-operative work attempted between agencies and too much antagonistic talk. There is too much neglect of important legitimate fields of work outside one's proper sphere, where, on this controversial ground, antagonism most frequently springs up and flourishes. There is too little frankness about our own and too much ignorance about other's work. All of this must be overcome before the health work of a community will prosper to the fullest extent.

How shall such a department of health be built and maintained? The procedure is not different from that used in successful business.

(1) *An accurate plan* based on the commuities' needs must be made. In this plan, building and maintenance can be separated. Accurate information concerning the health needs of the community must be made the basis of this plan. Many failures in health work are due to the fact that the plan of an improperly qualified person has been attempted. Generally speaking, the department should be developed division at a time with adequate maintenance available from the start.

(2) *A detail budget is indispensable* to the proper financing of the department for in it you express in dollars the relative value and importance of the activities engaged in.

(3) *Since the business* of operating a department of health is in the *last anlysis governmental,* there must be authority at *law* regulating its activities. The right type of personnel will thoroughly familiarize itself with the provisions that the law makes and direct all official activities accordingly.

(4) Administrative and technical personnel should have *special training and experience.* They should devote their entire time to departmental work.

With an adequate plan, an expressive budget, clear authority and trained, diligent personnel, a department of health can hardly fail. When it comes to deal with courtesy, with dispatch, with accuracy, with thoroughness, with firmness and with courage, but, these should be tempered with common sense and fairness without prejudice or preference.

DISCUSSION.

Dr. J. B. Black (Jackson): I have enjoyed very much the paper by Doctor Durrett. It is very concise and to the point. Relative to the organization of a city health department, my experience is rather limited, but one of the first things we had to confront when we started to organize our city health department was the matter of personnel. You know if you go into eastern cities where they have had health departments for some time, these departments being organized during the period when health departments were looked upon as sort of rubber stamp affairs, you will notice a lot of decrepit and old, worn-out men sitting around at different desks—just relics of the beginning of the organization of the health department. And if you go to organize a health department now in any city where they have had no organized effort along that line, if it leaks out that you are after sanitary inspectors, for instance, it is very interesting to see the kind of men that apply for employment. The halt, the lame, the one-eyed men, all kinds of decrepit-looking individuals come because they have heard the city was organizing a new department and they want employment.

Sometimes you find some embarrassment when you refuse to accede to their demands and insist on employing a younger man who has a disposition to get out and do things. If these men can exercise political influence, they will try to disturb your equilibrium along that line and sometimes it really makes us shaky and we think we are up against it. Doctor Durrett made a good point when he said that in organizing a health department you must have people who are trained to know what they are doing, people who

know something about making sanitary inspections, nurses who know something about public health work. Then when you get in it you will find a good many old ideas about public health work. For instance, in almost any city when you begin you will find the people will beseech you immediately to fumigate houses, they will want you to take care of weeds. If I had cut all the weeds in Jackson that I have been called upon to have cut I would not do anything but cut weeds. One of the first things you must do is to get before the people the idea that this is something that is getting at the fundamentals of public health, that it is not just fumigating houses and cutting weeds. You must outline the particular thing. First, you must look over the situation and see what the things are that are important and then begin to direct your efforts towards these things. It is not well to start too many at one time, but select the most important things and direct your efforts towards the ones that are most needed. Then as you proceed you can take in these other things, but do not let them swamp you with these minor details of public health work.

You will get a good many obstacles in organizing public health department in cities, and one of the most formidable is the question of financial backing. People who own quite a bit of property do not, for instance, want to connect the negro houses with the sewerage system. They are perfectly willing to screen the houses, but they do not see any sense in putting those houses on the sewer line, and when you begin to press it they will come in and work every wire that can be pulled in order to get away from that, but you must go right after it—do not think about your job, but just shut your eyes and mouth and go right after it, whether you lose your job or not.

In most cases it is a good thing to listen to people. When these men come in and sit down and you reason with them, you will be surprised how reasonable men are, although they may have money involved. The other day a man came into my office, a real estate man who had several houses, and it was going to be a large expense to connect them with the sewerage system. I had a map and pointed out that they had 25 cases of typhoid fever last year. I told him our aim was to better the health conditions in this city, and after I had talked to him and explained it to him for a while he left in a good humor and was perfectly willing to go ahead and make the sewer connections. You must also protect their interests as much as possible. They complain oftentimes that the sewerage system will be abused. The first thing we did was to get an ordinance that would make it an offense for any person to abuse the sewerage disposal system, and then we outlined a plan how to proceed, how to build these houses, so that they might know whether they were abused or not, and therefore protect the man against the carelessness of his tenants.

Doctor Durrett said you must know what you are going to do. If you do not know just how to proceed do not proceed until you do know. Delay until you fully establish in your mind how you are going to do it, but once you have made up your mind how you are going to proceed, go right out and do not let anybody turn you aside.

Dr. J. J. Durrett (closing): The doctor has made some very good points, for which I thank him.

Arriving in Memphis in 1920, I found a long list of applicants for positions in the department. They had every reason why they should be employed except that they were qualified to do the work. You can't employ such personnel and run a department of health successfully.

Already employed were many old persons who couldn't work and some younger ones who wouldn't work. The old employees were treated with courtesy and fairness. They were given tasks suited to their age and ability and some were pensioned. Those who could but would not work either resigned voluntarily or involuntarily. We now secure all nurses and sanitary officers through civil service examinations with a three months' probationary period before permanent employment.

Tenant property is a serious problem and we have finally come to the practice of vacating it if the owner refuses to keep the property in a condition of repair so that reasonable sanitary conditions can be maintained.

This sort of procedure will get results. It will also make temporary enemies for the department of many persons affected by it. If a person is unwilling to face this he has no business trying to be the head of a department of health in a large American city.

FURTHER DISCUSSION OF THE GALL BLADDER.

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As I stated in a former paper on this subject, I will not try to cover all details of gall bladder surgery; I will endeavor in a

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brief way to write a paper that will bring out a discussion which will tend to make some contribution to the recent work done in the proper treatment of gall bladder disease. The text of this paper will be conclusions drawn from my own personal experience, and what I have learned from others.

Many points are to be considered in treating gall bladder disease successfully:

First, we must be sure whether or not the condition being treated is primarily a gall bladder condition.

Second, we must agree that the great majority of the diseases of the gall bladder and ducts are due to an infectious process arousing distinct changes in their walls.

Third, we must remember that changes in the gall bladder and ducts may often be secondary to some other more or less pronounced primary condition, and should surgical intervention of the gall bladder alone be resorted to, we do not cure our patients and have poor results.

Fourth, we should not overlook the gall ducts in all gall bladder diseases.

Fifth, subsequent diseases often cause patients to be dissatisfied with the results in gall bladder surgery.

Sixth, and most important, gall bladder surgery should not be resorted to until we are sure the gall bladder is involved.

To take up the more definite and frequent conditions which are attributed to the gall bladder and biliary passages, the mildest of these is a simple cholangitis in the acute form, or more often catarrhal jaundice; the symptoms of which are simple jaundice usually progressive in type, accompanied with or without fever and usually associated with gastro-intestinal upsets, loss of appetite, etc. This condition is undoubtedly caused from a mild infection or edema of the ducts and is essentially obstructive. In this disease, the surgeon has no place; the treatment should be entirely medical, the treatment also being directed to the accompanying gastro-intestinal condition. Acute cholangitis usually runs an uneventful course from a few days to a few weeks and leaves no bad effects, however, such attacks may be the starting point of other diseases of the biliary tract.

Chronic cholangitis is rare without some permanent severe lesion of the biliary system, such as cholelithiasis, cancer, etc., but may occur independently in which case if a diagnosis can be made, the treatment should be medical.

Cholecystitis is most frequent of the biliary lesions and is most frequently caused from a stagnation of bile in the gall bladder. This stagnation of bile itself is secondary to the infected process of bile ducts. This condition is both acute and chronic in form.

Acute cholecystitis may vary from a very mild catarrhal condition to a virulent suppurative or gangrenous type. Inflammation may subside quickly with drainage through the cystic duct, in which case symptoms disappear very rapidly; on the other hand, the process may continue suppurative or gangrenous in type. The symptoms in the acute form are usually pain and tenderness in the upper right quadrant, moderate temperature, spasm of the rectus muscle, usually accompanied by nausea and vomiting. Surgeons differ as to the proper treatment, but it has been my opinion that operation should be deferred until the acute symptoms have subsided, in which case we use an ice bag to the abdomen, the patient kept under observation in bed and given saline cathartics. After these acute symptoms have subsided, I believe cholecystectomy should be resorted to. Should the attack progress and not subside on treatment, then it would be better to do a cholecystostomy, and at some later date do a cholecystectomy. Simple acute cholecystitis may or may not be followed by other attacks, but as most

frequently the causative factor remains, subsequent attacks will follow; this is often followed by a chronic cholecystitis, frequently hydrops of the gall bladder is apt to follow.

Empyema of the gall bladder or suppurtive cholecystitis usually follows the milder catarrhal cholecystitis, but may be independent starting suddenly with chills, fever, great pain, tenderness and rigidity in the upper right abdomen, accompanied by nausea, vomiting and elevation of temperature. These symptoms may be only of moderate severity, or may be very severe indeed. The condition may subside only to return again, or it may progress to a gangrenous type with rupture of the gall bladder. As I have stated, it is not wise to wait too long before operating in acute cholecystitis, but some time should be taken to see if the attack will subside, for it is much safer and easier to operate after an acute attack, has subsided, and also at this time the gall bladder can be removed at the primary operation. In the acute stage of empyema of the gall bladder, the gall bladder is very much distended, edematous, tense and cannot be emptied. The cystic duct is in all cases, very much edematous and obstructed. If previous attacks have occurred, there may be pericholecystitic adhesions.

It is difficult to differentiate a phlegmonous cholecystitis and gangrenous cholecystitis, but as both conditions are severe and demand immediate operation we are not interested in differentiating them. In gangrenous cholecystitis the gall bladder if it has not been ruptured is very dark in color and rigid and its walls friable. The contents consist of bloody, dark pus and sometimes sloughs. If the gall bladder has ruptured then the symptoms are those of peritonitis and the case is most often fatal. Rather than do a cholecystectomy at the primary operation in this condition, it is usually better to wall off and drain the contents, and then remove the gall bladder at a second operation.

The symptoms of various types of acute cholecystitis are most variable, varying from mild to very alarming and may be gradual or sudden in onset.

Pain is a constant symptom and may be dull and aching or severe and continuous with exacerbations. Pain may be local in the epigastrium or diffuse. It may be referred to the back or right shoulder, or though rarely, the pain may even be referred to the appendiceal region.

Nausea and *vomiting* are variable, usually present at the onset, but may be very slight or absent.

Rigidity is always present over the gall bladder, but is also varying in degree.

Tenderness is usually marked, this may be local over the gall bladder or diffuse over the entire abdomen.

The gall bladder may often be palpated, especially if it is greatly enlarged, but due to the tenderness it is often not felt.

The blood count is always increased.

As stated, the treatment is surgical. Removal of the gall bladder is the operation of the choice, but where it cannot be quickly and safely removed in the acute attacks, we should resort to drainage of the gall bladder, but surely a cholecystectomy should be done at a subsequent time.

Simply to repeat what I have stated above, I differ with the surgeon who always operates in the acute attack, and I believe this is the opinion of most other surgeons. Whenever possible the acute attack should be allowed to subside, but should the symptoms not subside or become alarming, then immediate operation is my choice. Should the operation be deferred, the patient should be kept in bed, fluid diet, or better, no diet, only water, purgation with cathartics and an ice bag to the abdomen.

Acute cholecystitis may be followed by chronic cholecystitis or chronic cholecystitis may be low grade infection with in-

fection with insufficient biliary drainage, or it may follow in patients with biliary calculi. The symptoms are those of cholecystitis of varying degrees of intensity, and it is impossible to determine in many cases by the symptoms whether or not calculi are present.

Chronic cholecystitis is the one condition of the gall bladder where there is much room for a more definite understanding among the surgeons and physicians, and even among the surgeons themselves.

In a case where a stone exists or where the symptoms are vague, we are not all certain as to the proper treatment.

In a simple chronic cholecystitis, the gall bladder is usually greyish in color, its walls thickened and somewhat edematous, especially near the cystic duct, the duct itself is usually thickened and often the common duct is also thickened; the gall bladder does not empty readily; the bile is very dark; thick and viscid. This type of gall bladder sometimes causes symptoms of cholecystitis, but often the symptoms are very vague. To me this is the most interesting type of gall bladder. Some complain of dizziness, headache, dyspepsia, constipation and with an uncomfortable feeling in the upper abdomen with some slight tenderness but give no history of acute attacks or previous attacks, no distinct pain is complained of. The X-Ray usually shows a thickened gall bladder with the characteristic crescentic or flattened deformity of plainly made out with the fluoroscope. The duodenal cap. The gall bladder at operation is distinctly pathological and is most cases there is no other pathological lesion found, many cases coming to operation having been previously operated and the appendix removed without relief from symptoms. I have removed a great many of these gall bladers, believing that where there is pathology it should be removed. Previously I drained these gall bladders, but the results were about the same and I may say, disappointing. The patient often continues to complain of the same symptoms.

I have come to the conclusion myself that in a great majority of cases, a gall bladder of the above type without definite symptoms, should not be operated upon. I believe these gall bladders are simply secondary to certain inflammatory changes in the duodemous duodenal ducts.

As has been pointed out by Pottenger in recent months, many of these cases which have previously been operated upon, have had their symptoms referred from a tuberculosis of the lung or pleura. Several years ago I made the observation that many young people have had a gall bladder operation for these vague symptoms. It has also interested me to see in a series of cases where the X-Ray revealed an enlarged thickened gall bladder, and this condition was confirmed at operation, that these cases all showed hookworm infection, and in the cases where the hookworm treatment was given after removal of the gall bladder, they all improved, but where the patient did not take the hookworm treatment, they were not greatly benefited by the operation. I believe in these cases the hookworm caused a duodenitis and also the primary cause of the symptoms. I have endeavored to demonstrate the hookworm in the gall bladder, but have been unable to do so, but I have no doubt that a great many so-called chronic gall bladder disturbances are secondary to the duodenitis caused by the hookworm infection. The infecting agent of the gall bladder may not not be the hookworm, but it is caused by the hookworm in duodenum. Pathologic gall bladders are seen accompanying nearly every case of chronic ulcer of the duodenum. This again shows to me that the gall bladder is often secondary, although I most always remove the gall bladder in these ulcer cases where it is diseased. I have had occasion to see the gall bladder

symptoms clear up if they were present following the cure of the ulcer by operation, without the gall bladder itself being operated upon. I believe that many thickened gall bladders are not at all responsible for any symptoms, although they themselves were the result of diseased condition.

I wonder if some of our poor results in chronic gall bladder infections are not because there is some other primary focus of infection which keeps up an inflammation in the gall ducts. In the case of the hookworm infection I have wondered also, if the reason that we cannot entirely get rid of the hookworm infection in the intestine by medication, is not because the hookworm may implant itself in the gall ducts and the appendix. This chronic gall bladder without definite symptoms in my opinion, should rarely be treated surgically until all other efforts have failed.

It may be well to state here that a simple hydrops of the gall bladder may produce no symptoms, or may be followed by acute symptoms of cholecystitis. It probably should be classed as a chronic gall bladder and certainly is always a menace and should be treated surgically by removal. These gall bladders occasionally reach enormous sizes and are filled with mucoid fluid which cannot be emptied through the duct.

More frequent than simple cholecystitis is cholelithiasis with an accompanying cholecystitis.

The etiology of gall stones is surely an invasion of the biliary tract by bacteria with a mild infection in the presence of a stasis of bile. The stagnant gall bladder is again a source of danger, because it is primarily an infected gall bladder. Most frequently in cholelithiasis we have a previous history of cholecystitis.

The classical symptoms of cholelithiasis, are pain which may be at first dull, burning or gnawing in character and confined to the epigastrium and may resemble the pain seen in case of gastric or duodenal ulcer. This is usually followed by typical "biliary colic", which is an acute colicky, severe pain the upper right abdomen which causes the patient to writhe around in bed in great agony. This is caused by the gall bladder's effort to dispel or displace a stone which is lodged within it or within its duct. Pain is very often referred to the back, the right shoulder or to the diaphragmatic region.

Tenderness is always present over the gall bladder. Some surgeons give a point, or more specific area of tenderness, but have found this point to depend on the individual case and not constant, and such specific points of tenderness are usually absent.

The gall bladder is enlarged in the majority of cases, but may or may not be palpable because of the position of the gall bladder or the rigidity of the muscles. When the distended gall bladder can be palpated it is felt as a smooth pear shaped mass, usually easily movable.

Fever is present when the infectious process is sufficient to cause it, but in cases of a simple cholelithiasis, it is more often absent. When the infection is confined to the gall bladder, the fever is usually only slightly elevated and when it is very high, there is almost always some involvement of the peritoneum or bile ducts. In these latter cases, it may reach 104 degrees and be very rapid in onset, with a quick rise and fall. Surely there is no reason for a high temperature where the infection is latent, and where the gall bladder is simply trying to displace a stone.

Vomiting is usually present during an attack of biliary colic, but usually absent between attacks. Jaundice is not present

The X-Ray is a great help to us in diagnosis, but negative findings never eliminate the possibility of gall stones and

positive findings are not as constant in our hands, as Case of Battle Creek reports.

The gall bladder in cholelithiasis varies. The enlargement may be very slight or very marked. The gall bladder walls are usually thickened and edematous. The bile as a rule, is thick, ropy and dark in color. The "cholesterin gall bladder" as described by Moynihan, is usually normal in appearance, but the mucous membrane has imbedded in it quantities of cholesterin as fine as sand; in such cases the treatment is cholecystectomy. McCarty described the strawberry gall bladders which may or may not contain stones. They are chronically inflamed and their walls show yellow stops against the reddish background and are attributed to deposits of lipoids and cholesterin. The treatment of this form of gall bladder is also cholecystectomy.

A perforation of the bladder may follow empyema of the gall bladder or cholelithiasis. In any case it is a very grave condition and demands immediate operation and where possible, cholecystectomy. The symptoms are very severe and those of peritonitis being most pronounced at first in the region of the gall bladder. If a localized abscess forms, the symptoms may be entirely localized.

Perforation with localized abscess formation is usually not an acute perforation and usually follows ulceration of the gall bladder wall caused by stones.

The treatment of cholelithiasis is surgical. Cholecystectomy is the operation of choice and should always be done at the primary operation, but where for any reason it is not done at the first operation. it should be done at a secondary operation. It is my opinion that for a permanent cure, cholecystectomy is the only effective treatment.

Just to mention the variety of gall stones—they may be solitary or multiple, sometimes 1,000 stones have been taken from one gall bladder. They may be of pure cholesterin, or the laminated variety which are composed of cholesterin and calcium salts. A third type is the most common and yellowish or brownish in color and is known as the mixed cholesterin stones. A fourth type which are greenish in color and usually much larger than other types, get their color from the preponderance of bile pigment salts. The pure bilirubin—calcium are usually put in this class.

Statistics show that stone in the cystic duct occurs in about 20 per cent of cases of cholelithiasis and its symptoms are those of an impacted stone as described under cholelithiasis. The severity of symptoms depending on the size of the stone, the acuteness of the inflammation, the roughness of the stone, and the completeness of obstruction. Paroxysms of pain occur until the stone is lodged. In about 70 per cent of cases this pain is referred to the right scapular region. Jaundice is not present in uncomplicated cases. The gall bladder may be large or small, depending on the character or degrees of inflammation in the organ before the stone enters the duct and upon the completeness and duration of obstruction.

The treatment of stones in the cystic duct should also be cholecystectomy; being sure to displace the stone upward before ligating the duct, however, in some cases it will be necesary to remove the stone and simply do a drainage of the gall bladder, in which case cholecystectomy should be done at a subsequent operation.

Stone in the common duct is not infrequent. The symptoms are somewhat like stone in the cystic duct, but are accompanied by jaundice and in many cases, intermittent fever with chills and sweats, following this the intensity of jaundice increases.

There is no enlargement of the gall bladder in uncomplicated cases.

The treatment should be medical at first and after the acute symptoms have subsided, operation with removal of stone should be resorted to. If I am satisfied that there is no great damage to the duct and that there are no more stones in the duct, I remove the gall bladder if it shows pathology, however, if I am afraid of damage to the duct which might result in a stricture to the common duct, I never remove the gall bladder, leaving it so if necessary, I will have some way to divert the bile by doing a cholecysto-duodenostomy. In any case, should one find it necessary to operate on a stone in the common duct during the attack, especially if jaundice is marked, you should be certain that a patient is secreting some bile in the stones before removing the gall bladder; even if no stone is found in the common duct. In case of stricture of the common duct where the gall bladder has been removed, you can sometimes resort to an anastomosis between the common duct itself and the over-lying duodenum.

Stones in the hepatic duct alone are rare, but are found there frequently associated with stones in other locations.

In all gall bladder or gall duct diseases where there is an enlarged common gall duct, it should be explored even though patients have no jaundice and no stones can be palpated from without. An enlarged duct means an infected duct and should be drained; often in such cases stones are found in the common duct, where there are no accompanying symptoms which usually occur in common duct stones.

Carcinoma of the gall bladder and bile ducts occurs more frequently than is commonly thought. Chronic progressive jaundice, without fever, with decoloration of the stools, absence of sharp pain, moderate enlargements of the liver, a distended gall bladder and continuous emaciation are characteristics of obstruction of the common duct due to cancer.

When a nodular tumor of the gall bladder is felt which can be readily diagnosed cancer, the case has progressed too far for surgical intervention. The symptoms of early cancer of the gall bladder are vague; they may be simply the symptoms as seen also in carcinoma of the liver, or there may be symptoms of chronic cholecystitis with progressive emaciation. X-Ray is occasionally of diagnostic value, but usually the diagnosis is made at exploratory operation.

I cannot go further into the diseases of the gall bladder and its ducts, but it may be well to bear in mind that there are many conditions such as injuries and complications after operations. There are also various anomalies, etc.

I believe no paper should be written on the gall bladder without at least stating "Courvoisier's Law," which surely holds good in the majority of cases. "In obstruction of the common duct due to stones, there is contraction of the gall bladder; while in cases of the enlargement of the gall bladder, the obstruction is due to causes other than stones."

In closing this paper I wish to apoligize for a great deal of repetition of a former paper on this subject, and I wish to make a few remarks. It is my opinion which is based on a series of gall bladder cases and also on experiences of others, that the operation of choice in gall bladder diseases, is cholecystectomy, and although it is often necessary for us to resort to cholecystostomy, it is a paliative procedure, and should be followed by cholecystectomy. It is my practice in each case where there is an enlargement of the common duct and more especially where multiple stones exist in the gall bladder, to explore the common duct thoroughly and to drain it. The absence of jaundice is no sign that stones do not exist in the common duct.

The differential diagnosis of cholecystitis with stones and cholecystitis with-

out stones, is usually very difficult and often can be made only at time of operation. It is my belief that the chronic gall bladder without definite symptoms, should be operated on with reluctance, and only after every other diagnostic procedure has failed to show a primary condition in some other part.

In the operation for cholecystectomy, I might say that it is only necesary that a large enough incision be made to get sufficient exposure, then the gall bladder can be removed without difficulty, either from above downward, or from below upward. It is important to expose thoroughly the cystic duct in order to prevent trauma of the common duct. I have never felt justified in closing the abdomen after cholecystectomy without drainage, though this is frequently done by some surgeons.

I believe that even in a surgical paper on the gall bladder, I should state my experience with Lyon's duodenal drainage. It has been my experience that this method has no place in the treatment of gall bladder or the ducts, is essentially an infective process of the tissues and no drainage could get rid of this pathology. Lyon's drainage surely does not even drain the gall bladder or its ducts, it simply gets rid of bile which has already been excreted into the duodenum. It stands to reason from the anatomy of the gall bladder and the ducts, that a tube in the duodenum from this tube can do little more good than the oral administration of cathartics. A fairly large series of cases which I have collected, have been drained by the Lyon method and have shown little or no permanent improvement and all cases have come to surgery. The advocates of this method seem to use it not only in gall bladder conditions, but in any condition where the patient will submit to it, and I have seen salpingitis cases and cancer cases drained over a prolonged period by this method with rather disastrous results. I mention the Lyon method of drainage simply to condemn it.

DISCUSSION.

Dr. J. W. Barksdale (Winona): I am sure we have all listened with a great deal of pleasure and profit to these two most excellent papers. Indeed, they cover the field of gall bladder surgery so fully that it leaves very little to be said except in commendation. I want to agree most heartily with several points made by both of these gentlemen, and, first, to emphasize the position that Dr. Miller has taken with reference to the history. As Doctor John B. Wyshy used to say, "Let us have the story of the case." I believe in this day we are tending to depend too much on laboratory-made diagnosis in various conditions, and I think it is time we are going back to the fact that we are primarily doctors and we should be clinicians. The man who depends upon the laboratory for diagnosis is not a good clinician himself.

The relative merits of cholecystectomy versus cholecystostomy have been so much in the forefront of medical investigation in the last eight or ten years and have led us nowhere at all, that I think it is a good thing to stay away from. I think the doctor has summarized the attitude of most operators when he says that the operator knows nothing until he gets inside the abdomen. That in my opinion is the proper attitude in which a man should approach every case—to be guided by conditions as found at operation, not by the condition of the patient in general. Not to go in with a set idea of a certain condition and a certain procedure, but to go in with the idea of doing what seems best for the patient at the time of operation.

As to operation early or late in acute attacks, I have just recently had occasion to send out a questionnaire on this subject, as well as one or two others, and I am surprised to find men who operate as soon as diagnosis is made in an acute attack, and those who prefer to delay a little, are just about equal. Out of 138 replies received, 68 said they would operate immediately during the acute stage; 62 stated they would wait for a subsidence of the acute inflammatory condition unless there was present toxemia, gangrene, a rupture, or some urgent symptoms that denoted immediate operation. Personally, I am inclined to believe that the earlier we operate in these cases, the better, because statistics do show that we run across conditions that necessitate operation at a later date when the patient is not in a good shape, and we have gained nothing by waiting, but have subjected the patient to a good deal of risk.

I know that the abdomen is being closed many times today without drainage after cholecystectomy. Personally, I have not had the temerity to do it. One of my friends a few years ago said he had done 20 cases and closed the abdomen without drainage, but my recollection is that two of them had to be re-opened. Doctor Miller says he has not had that accident happen to him. If we can do this without drainage, we will of course have accomplished a great deal for the patient, but there is no doubt that a drain in the abdomen causes disturbance and of course brings on adhesions. I repeat that if we can close the abdomen without drainage, we will surely do a great thing for our patients.

I have enjoyed both of these papers and I am sure we have all listened to them with a great deal of profit to ourselves.

Dr. V. B. Philpot (Houston): I, too, have enjoyed these two very excellent papers and the reports of Dr. Miller from the patients themselves were very interesting indeed.

I would like to report a few cases I have had within the last two years, I believe about 50. I have not kept up with them as Dr. Miller has in securing the end results. In about 41 of these cases the gall bladder was removed entirely, and the rest of the cases were drained. About the only thing I know about the end results is that I have heard no complaints out of any of these patients except two. These two were cases that were drained and returned for a second operation.

Two of the series mentioned above died, and I want to report more in detail one of the cases that died because of the youth of the patient. A child four years old had an acute, suppurative cholecystitis, a gall bladder badly distended and entirely full of pus. I might say that our pr-operative diagnosis was acute, suppurative appendicitis, as the whole right side was rigid and distended and nearly as tender over the region of the appendix as over that of the gall bladder. The blood count showed 32,000 whites, 92% neutrophils.

The fluoroscope showed that the child had, in addition to what we thought was acute, suppurative appendicitis, a badly enlarged heart, but as we considered the case an emergency, we took a chance on operating with the intention of putting in a drain only. On opening the abdomen we found the condition mentioned, i. e., an enlarged gall bladder filled with pus. The patient did well for the first 24 hours, but died suddenly the next day from cardiac trouble. This is the youngest case I have ever seen with such a condition.

Dr. John Darrington (Yazzoo City): About ten years ago I had the pleasure of reading a paper before this Association regarding the advisability of draining the gall bladder or removing it. We had quite a discussion. I believe there is only one other subject that will bring forth more discussion than this, and that is the indication for a use of forceps. We might keep it up all day. We were somewhat in doubt at that time and we are somewhat in doubt now, which methods to pursue, but the truth is that in some cases drainage is indicated and in other cases removal is advisable. If either of these methods would give us 100 per cent recovery, we could settle it at once, but you can drain cases and they come back complaining; and you can remove, and they will come back complaining. We do know, however, that infection is probably the cause of gall bladder inflammation. If focal infections are the greatest cause of gall bladder trouble, the thing to do is to look for the infections and remove them. But we are not through with the case when we take out the gall bladder or drain it. The patient requires further investigation regarding the original cause. As the essayist advocated, in certain cases he would drain the gall bladder and then follow with a cholecystectomy. My idea on that is that after I have drained the gall bladder I would wait for further trouble before I removed the gall bladder, because we have all had the experience of perfect recovery and permanent results from simple drainage. Curing the patient is what we are after. Many of these patients will come to you that are not good surgical risks, they have bad hearts, kidneys, their age may be against them, or something else. I think it is good surgical judgment in those cases, and I have done it in several instances, with entire satisfaction, to use a simple local anesthesia and go in there and drain the gall bladder. We know they will get results for a few years anyway, and they may live out their expectancy. Drainage of the gall bladder under local anesthesia should not carry any mortality rate.

Regarding removal, it is always wise to bury the cystic dust after it is ligated. Pull a little bit of perineum over it and nature will take care of it. Where the liver has been damaged by removal of the gall bladder it calls for drainage of the wound. I slip a little drain in the wound in those cases in order that I may sleep better.

But the fundamental principle in all surgical work is to get as nearly 100 per cent. recovery as possible. We are far from that in gall bladder surgery and in many surgical conditions, but I believe we are on the right road when we

are trying to eliminate the original cause of these ailments.

Dr. C. C. Hightower (Hattiesburg): Doctor Gordin spoke of permanent cure. There is "no such animal" as far as I have been able to see in gall bladder surgery. Doctor Miller reports only 67 per cent. permanent cures from cholecystectomy. Every surgeon and every general practitioner knows that every case of gall bladder surgery is not cured, but I have been practicing the last three or four years a little measure which I believe is a great aid in rendering permanent cure in cholecystectomy. It is not original with me—I do not know who first began it—but it has worked out satisfactorily in a number of cases. The trouble is the adhesions following the operation which drag upon the pylorus and duodenum. We break up adhesions, take out the gall baldder and prepare the field the best we can and leave it. What happens is that the duodenum and pylorus are soon adhered to the operative area and we have the same symptoms as before. Any one who has looked at the action of the pylorus and duodenum through the fluoroscope can understand why the dragging and pulling on the pylorus and duodenum would cause the return of symptoms. That is what causes the trouble, according to my belief, in a greater percentage of cases that do not receive benefit from a cholecystectomy. What is the remedy? In a number of cases it cannot be remedied, because the adhesions are so extensive that it is impossible to break them all up. My mother died of adhesions following a cholecystectomy and I have been studying this condition very thoroughly ever since and have exerted every effort to determine why these adhesions re-form. You cannot break them all up in many cases, but in a great majority of cases where you have simple adhesions around the gall bladder and liver, or the duodenum and pylorus, you can break up the adhesions, take out the gall bladder, and take the end of the omentum, provided it is long enough, and pull it up and without too much dragging on the colon you can pull it down around the duodenum and pylorus and tack it there so that it lies between the liver and the duodenum and pylorus and prevents these structures from uniting. In every case I have operated during the past three or four years I have done this. I have not had any bad effects in a single case. In one or two cases where I could not do it on account of the shortness of the omentum, I have had some disagreeable postoperative symptoms. It is a very simple thing to do and I want to urge you to try this and then I would like to hear your results after you have tried it in a number of cases. I had a case about eight years ago that I operated because of gall stones and when I got in I found very bad adhesions of the gall bladder, duodenum and pylorus. I broke up the adhesions and got ready to take out the gall bladder when the patient suddenly collapsed. After repeated efforts to revive her for about an hour, and failing, I did not feel justified in continuing the operation, so closed her up. She gained in weight, the symptoms disappeared, and while the gall stones are still in her she was perfectly well the last time I heard of her.

Dr. H. A. Gamble (Greenville): Doctor Hightower's remarks cause me to amplify a little what he said in regard to protection of the duodenum and the pyloric end of the stomach. I have used the method he speaks of in practically all cases and in cases where there has been a good deal of raw surface and it is impossible to utilize the omentum for that purpose I have found from the procedure of taking a flap from the abdominal wall and suturing it over the raw surface acts very well and prevents complication. So often people complain of digestive disturbances that really are due to adhesions, and they can be obviated in that manner. One other question has been brought out this morning and that is whether to drain or remove the gal' bladder. One feature of the pathology of gall bladder disease was not touched upon and it is one which I feel is a very important factor in deciding this question. That is that in approxmately 205 operative cases of cholecystitis we have always found associated with it a varying degree of hepatitis. Sometimes it is localized merely around the gall bladder, and other times it very extensive in its character. I think that is one of the major reasons why the gall bladder should be removed, because the liver is involved in all cases to a greater or less extent.

Dr. A. G. Payne (Greenville): These two papers have covered the subject so thoroughly that there is very little to be said. However, there are some points that I would like to emphasize. A few years ago Doctor Richter, of Chicago, and Doctor John Bottomley, of Boston, began a series of these non-drainage cases after cholecystectomy. A good many men still look upon drainage in the lower abdomen as a necessity when in reality the drain is a very provocative source of trouble, such as adhesions, stasis of the bowel, all of which cause the abdomen to be opened later. We have found that in the upper abdomen there is not nearly so much danger from closing the abdomen completely as in the lower abdomen. The infection is not so great in the upper abdomen as in the lower,

therefore we can with impunity close the abdomen tightly and I am satisfied that in a great many cases—Doctor Miller quotes 67 per cent. of complete relief, which leaves 33 per cent. of them with symptoms following, which in my opinion is caused from the drain.

Recently it has been brought to my notice that the liver cells are diseased from the use of arsphenamin. I recently had a case that after the administration of several doses of arphenamin became jaundiced. There was a question as to what the condition was—what form of jaundice it was. Upon watching this man we found just what we had suspected, that the arsphenamin had caused the jaundice. This case has run for a long time and has grown progressively worse. What are we to do in those cases? In my opinion no patient should be allowed to succumb without the outward drainage of bile, which in many instances gives relief and prolongs life.

Dr. W. W. Crawford (Hattiesburg: Gall bladder surgery resolves itself largely into the question of the personal equation of the surgeon. The thing that is most successful in your hands may not be so in mine. If you have had sufficient experience to warrant you in making deductions, then you certainly are warranted in following certain lines of procedure in any given case. The question certainly of drainage or non-drainage of the gall bladder conditions is based upon the individual surgeon's experience. I once heard Doctor Charles Mayo asked the question which was his preference, and he said, "Personally, I either take the gall bladder out or let it alone; I do not drain it. Other men do differently in this clinic." The question of drainage of the acute gall bladder or the removal is certainly a personal one. I am afraid I cannot agree with Doctor Barksdale that an acute gall bladder is as much of a menace to the individual as an acute appendix. Statistics will not bear out that conclusion. It is the rarest thing that we ever see a ruptured gall bladder, but a ruptured appendix is a common experience. There is no question but what you can serve your patient better if you can carry him through the acute attack of cholecystitis and then at a later operation remove the gall bladder and such a case should have cholecystostomy.

Just one point I want to stress in Doctor Gordin's papers, and that is with reference to the involvement of the liver and particularly of the bile ducts. A great many cases of cholecystitis have an associated cholangeitis, and an infection extending up into the liver. Such cases are almost invariably jaundiced, sometimes mildly, just an involvement of the sclera, not the skin. I feel that any cases belonging to this group that are subjected to the surgeon's knife, whether the gall bladder is removed or not it should not be drained. A cholecystectomy should be associated with drainage of either the common duct or through the stump of the cystic duct. I think if we bear that in mind we will very often get much better results. I know of more than one case that we have closed after a cholecystectomy with mild jaundice in which we have been disappointed in the results.

Dr. J. A. Crisler (Memphis, Tennessee): I started my young professional life as a member of this Association and still feel an interest, the same interest, that I did then. I marvel at the great progress we have all made conjointly. I remember that one of the first papers that created so much discussion here 28 years ago was entitled, "The Use and Abuse of the Curette." After that came the discussion about appendicitis, whether it was medical or surgical. Now we have a subject opened up to discussion which would be interminable if we all carried out to the ninth degree of conclusion. But it would probably be the best day this Association could spend if we all stayed here all day and let everybody talk on these two papers.

The surgeons who have spoken have really expressed my sentiments and ideas exactly. It is, and I fear always will be, a question of personal equation and personal judgment based upon experience from the individual man's viewpoint.

Doctor Gordin's paper rather dealt with the medico-surgical aspect of the case and very thoroughly, too, and I agree with him that the gall bladder can be dallied with, with a great deal more safety than can the appendix. However, I am not prepared to say that we can dally with an acute gall bladder. I used to think the best way would be to drain a phlegmonous gallbladder, because the surrounding tissues were more or less involved, but when I got to removing these gall bladders it was such an easy job, all the connective tissues had been removed by edema and we had very few fibers of blood vessels intact. I have had two gall bladders to come off in my hand without any interference except trying to get under them. To me it has always been and I believe always will be a matter of personal judgment at the time of operation, both as to what I am going to do and as to whether I am going to drain after the cholecystectomy. I have left undrained quite a number of cases that had got along fine, and then I have drained a few that for some reason I believed were safely tied off, that the results were not good. Then I have tried to tie off the cystic duct in some cases that had

no apparent reason for drainage and in five cases hand running they drained bile.

Doctor Hightower's idea of carefully protecting the raw surface so as to keep the stomach and duodenum away from the raw areas is of course not new, but it is very important. The omentum is ideal in such cases but in many cases you can strip the peritoneum from the gall bladder, cut it wide so as to form a complete cover, and in that case you rarely have any results referable to post-operative adhesions. But if you do not do that you will have bad results in many cases that could have been avoided by carefuly closing or covering all these raw surfaces.

I do not know that I can add anything further to the discussion. I think Doctor Miller's paper is about the last word necessary from the surgical viewpoint.

Dr. V. P. Street (Vicksburg): In regard to the history, of course it is all important, but the history may be misleading and we need the laboratory to help us out.

In regard to drainage, I think it would be better if the size of the drain was reduced to say a couple of strands of cat gut, and we have reduced the size of the drain considerably.

Dr. A. E. Gordin (closing): Drainage after a cholecystectomy; it is true the the drainage tube invites drainage, but this is a very welcome invitation when drainage occurs. We put the tube in to invite drainage. In my opinion it is just as well to put in the drainage tube; I cannot see that it does any harm and it certainly saves us from opening some cases.

I had hoped some one would discuss these cases that have indefinite symptoms. In our hospital eight or ten surgeons are doing the same thing and we are all disappointed in our results, that is, where we operate on these gall bladders that have vague symptoms, or that simply show by the X-ray a pathological condition, and some of which are found to be definitely pathological at operation. I believe the gall bladder in these conditions secondary, and that the reason we do not get rid of the symptoms is because we have not found the primary condition, which may be the duodenum itself.

As to the frequency of permanent cure after cholecystectomy, every case is not cured, but certainly it is more dangerous to leave in a gall bladder that is infected than it is to take it out. In my short experience of about ten years I have had five cases comes to me with carcinoma of the gall bladder. All had had former cholecystostomies. I have had something like ten cases who have returned to me with gall stones or every acute symptoms of cholecystitis, and they also had cholecystostomies previously. If that is the percentage in my limited experience, what must it be in the total number of gall bladder cases? To me this is an argument for removing the gall bladder. We limit the possibility of carcinoma and also recurring cholecystitis. I believe that a great many of the bad symptoms we get following cholecystostomy are from not examining carefully the common duct, because as we know, in most cases of cholecystitis, we have a disease of the duct itself, and where cholecystectomy is done, many cases should have the common duct drained. I believe that in every case where the duct can be palpated and is enlarged we should go into the duct. This was brought to my attention by Doctor Downs, of New York—that in every case where there is an enlarged duct we should explore the common duct. Recently in my experience I got 16 stones out of a common duct and the patient had had no symptoms at all of stones in the common duct. She had 50 stones in the gall bladder and if I had not gone into the common duct she certainly would have had a recurrence of symptoms.

Doctor Payne said infection of the upper abdomen is not so dangerous. Of course usually we do not get as virulent infections in the upper abdomen as in the lower abdomen, but when such infections do take place the mortality is greater. It was for this reason that Fowler first put his patients in the Fowler position so that the drainage could go toward the lower abdomen.

Dr. C. Jeff Miller (closing): I have enjoyed very much the discussions and have picked up some very important points for practical use. The first question is the matter of adhesions. More than one doctor has claimed that our chief trouble after operation has been some adhesions. I question that very much and I think if we could make a thorough analysis of the real conditions following these operations we would find that the habits of the patient have a good deal to do with the ultimate outcome of the operation. In following the reports from these patients many of them showed no evidences of gall bladder trouble per se. One trouble is bile—in fact many cases get into trouble in the beginning because of bad habits in regard to diet, environment, methods of work, sedentary life, and so forth, and I believe if these could be overcome, and these patients could be shown the necessity of constant attention to diet and exercise, that we would be able to eliminate a large percentage of cases now set down to adhesions.

In regard to closing the abdomen, I am doing that in some cases, but it is in the selective cases.

The case that shows enlarged glands along the common duct is the case for drainage and even have a small drain in afterwards. For a long time I hesitated to close without drainage, because in many of them the duct closes well and they would have a small discharge of bile. That meant that I had put the drain down into the stump, and that caused liver flow and a discharge to take place. In the last two years the results in those cases where I removed the gall bladder and did not consider it necessary to drain the common duct to clear up the infection, the convalescence was unusually smooth and a larger percentage of them reported no complications afterwards. This is only to be used of course in selective cases, but I do believe we may close more of these without a drain than formerly.

But the thing I wanted to stress and the thing I had hoped some of the internists would speak about is the question of the proper preparation of these patients for operation and more especially the follow-up system afterwards. As to the question of diet, we need to cut down the cholestrin content. In the cases of women just before menstruation and during pregnancy there is a gradual increase in cholestrin contents until in the last two or three months of pregnancy it is almost double. What is the cause? It is not due so much to infection as to the type of diet and the sedentary life of many such cases.

As to the question of closing, instead of using the omentum we strip off a wide area of the peritoneum and if you do this you have practically no oozing.

The question of operating in acute attacks, unless it appears to be an ugly case, where you can mark out a distinct gall bladder, and where you have symptoms of trouble in the liver, I believe it will be wise, not in the individual case, but in a large series of cases, to wait a few days until the acute features subside. But I have gone into cases where I thought it just meant a scattering of the infected process, but yet as Doctor Crisler said, that case probably did the best. For a long time I delayed removing the gall bladder in the presence of impending gangrene, but in later years I have removed several of these with excellent results, so after all, in an acute case, without any symptoms of impending liver, I do not think you are doing that case any harm to wait until the acute features subside.

THE THORACIC AORTA. THE DETERMINATION OF ITS NORMAL SIZE.

A. E. FOSSIER, M. D.

NEW ORLEANS.

The study of the aorta is of paramount importance, because of the great frequency of its disease, which often produces sudden death, and as an important factor in causing the increasing premature mortalities in persons of middle ages.

At no time in the history of medicine has more thought been given to this problem than now. In very recent years works of monumental import have originated in different parts of Europe. The dreaded angina pectoris was the subject of classical researches by Albutt, Mackenzie, Wenckebach, Eppinger, Hofer, Danielopolu, Vaquez, Bordet, Gallavardin, Brown, Coffey and many others. Whilst opinions differ and experiences conflict, nevertheless, the vim and energy with which this important phase of this problem is attacked, portends its early solution.

Diagnostic errors are frequent. Many persons free of aortic diseases have been condemned to the mental agony of an ever present Damocles sword, and restricted in their activities by a well meaning but mistaken physician; on the other hand, many serious lesions of that vessel have remained unrecognized and untreated and the patient doomed to a premature death. Vaquez and Bordet stress this important point and state that it is common to find on post mortem examinations many different lesions of the aorta which have not during life been recognized; and that sometimes considerable dilatations orf aneurisms are seen, more often these "middle states" of aortitis, consisting of moderate enlargement of the vessel together with the gelatiniform or atheromatous patches on the walls, and that these types of aortitis may escape observation completely, and not be

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indicated by any perceptible sign on auscultation or percussion. They predict that the number of these accidental findings will diminish with the progress of roentgenology which already shows the most minute alterations in the shape of the aorta in the incipient stages.

The exact delineation of the size and shape of the thoracic aorta is of the greatest importance to the recognition of its diseases. Errors of diagnosis are mostly due to the frequent inability to delimit the area of the great blood vessels, and to a great extent to the failure correctly to interpret what structures produce the supercardial shadow and area of dullness. The classical radiological works on the heart and on the great blood vessels disagree in their interpretation as to which structures compose the borders of the supercardiac shadow. The main difficulty heretofore encountered, was the determination of the vessel which normally constituted the right border of the radiologic shadow of the great blood vessels. As long as this was not definitely known, it was impossible to arrive at any exact conclusions as to the size of the aorta. The following opinion of Charles L. Martin on this subject, expressed the views generally held, and still held, by a great majority of the radiologists and clinicians:

"In considering the great blood vessels, it is important to remember that the superior vena cava casts little or no shadow on a roentgen plate, and that the right border of that vessel as shown in the roentgenogram is in reality the right border of the ascending aorta."

Theo and Frantz Groedel, Dietlen, Vaquez and Bordet, Jauceas, Albert Weil, Lutembacher, and others, entertained that opinion, and contended that the shadow of the right border of the great blood vessels was due both to the superior vena cava and to the ascending aorta. (Line B.-C. Figure 1.) Their opinions conflict with the anatomy of this region. It is definitely stated by anatomists that the right border of the great blood vessels is formed beyond all doubt by the vena cava. These contradicting radiological and anatomical standpoints as to what vessels produce the shadow at the base of the heart and constitutes its borders, were cleared up by the illuminating anatomical roentgenological studies of Robert Chapron published in 1922. He definitely determined that the right border of the cardio-vascular shadow is formed above principally by the superior vena cava, and below by the right auricle and the inferior vena cava. He further states that, depending on the volume of the heart, and the variable width of the sternum, the superior vena cava may be partly hidden by the sterno-vertebral shadow, especially above, and in young subjects; but as a rule, it overlaps the spine and the sternum to the right. These conclusions reached by Chapron were confirmed by the clinical roentgenological studies of Granger and also by the reader by means of percussion. LeWald in an article published in 1923, stated that the ascending aorta is situated behind and is entirely covered by the sternum, and corroborates the works of Chapron that the right border of the upper portion of the median shadow is formed by the superior vena cava.

Anatomically speaking, the right border of the great blood vessels is formed beyond all doubt by the vena cava, and the left border is formed by the arch and the descending aorta, and the pulmonary artery.

The thoracic aorta consists of an ascending portion (the ascending aorta), which begins at the left ventricle, and passes upwards and to the right, on the left side of the pulmonary artery. It ascends near the anterior thoracic wall as high as the second right chrondrosternal articulation. It then turns backward and to the left, forming an arch, which reaches the posterior thoracic wall, at the left side of the fourth thoracic vertebra.

Piersol states that the upper border of the arch of the aorta reaches about one inch from the suprasternal notch, and that in small chests it may reach as far as the angle of Ludwig.

Gray says that the height to which the aorta rises in the chest is usually about one inch below the upper border of the sternum; but that it may ascend nearly to the top of that bone. Occasionally it is found one and a half inch, and more rarely two inches or even three inches below this point.

Delherm and Chapron state that radiology shows that the aortic hemicircle is about two centimeters below the clavicle.

The anatomical size of the ascending aorta is approximately 5 to 5.5 cm., in length, and about 2.7 cm., in diameter. The Japanese observer Iwakici Kam, has shown that the circumference of the aorta increases progressively from birth to the most advanced age, and that its caliber is greater, at identical ages, in men than in women.

There are no definite measurements by which the normality of the size of the aorta may be determined from a clinical or radiological standpoint. Vaquez and Bordet in their classical radiological work on the aorta have given us the following table on the size of the different portions of the aorta.

Normal subjects. Men. Standing positions

Age	Tranverse Diameter	Chord of Aortic Arch	Diameter of Ascending Aorta
Years	cm.	cm.	cm.
16 to 20	4 to 5	0 to 2.5	1.5 to 2
20 to 30	5	2.5	2
30 to 40	5 to 6	2.5 to 3.3	2 to 2.5
40 to 50	5.5 to 7	2.8 to 3.5	2.5 to 2.8
50 to 60	6 to 7	3 to 3.7	2.5 to 3
Over 60	6 to 8	3 to 4	3

Their measurements of the diameter of the ascending aorta are taken from the conclusions arrived by Iwakici Kam, and not from their radiological studies, and besides, they describe the transverse diameter of the arch as represented by the maximal distance which separates the contours of the median shadow, which therefore, includes the full width of the superior vena cava. (Line B-C., Figure 1.)

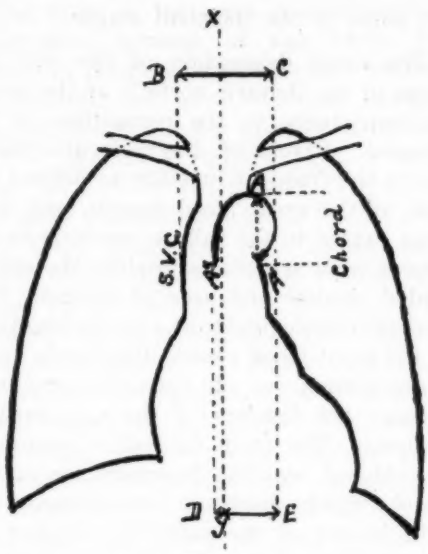

FIG. 1.

Line X-Y=mid-sternal line.
Line B-C=trans-diameter of aorta and superior vena cava.
Line D-E=trans-diameter of aortic arch.
A-A'-A" =arch of aorta.
—From Author's article, Annals Clin. Med., Vol. III, No. 8.

Lutenbacher in his book published in 1924, claims that the transverse diameter of the normal aorta includes the most extreme points of the shadow of the great blood vessels, and its measurements in men who have not reached the age of 50, are from 5 cm., to 7 cm. He also states that the size of the chord of the arch of the aorta gives important indications as to its enlargement, and that it measures normally from 2.5 cm., to 3.5 cm. Again this authority has included the size of the ascending vena cava in the measurements of the aorta.

Granger believes that the measurements of the transverse diameter of the arch of the aorta is 2.5 cm., at twenty years of age and that it increases to 5 cm., at seventy. (Line D.-E. Figure 1.)

The reader believes that the normal limits of the transverse diameter of the arch of the aorta are in the male adult, from 3 cm. to 4.5 cm., and that any measurements of that diameter more than 4.5 cm., are abnormal and are significant of some underlying pathological conditions. (Line D.-E. Figure 1.) Neuhof in his book "The Heart," (1923) writes as follows:

"As with standards of measurements for the cardiac orthodiagram, similarly there are several objections to a standard measurement of the normal aorta. Some of these objections are the indefinite point of the origin of the aorta, the difficulty at times of determining its borders, the high or low portion of the arch, the normal variations in size and shape of the heart in each individual. In aorta dilatation of moderate degree, the diagnosis may therefore depend upon abnormal contour rather than upon abnormal size f that vessel."

Reid in his book, "The Heart in Modern Practice," (1923) states.

"If the width of the great blood vessels, obtained by Roentgen mensuration, is more than one half that of the heart, syphilitic invasion of the aorta is almost certainly present. In doubtful cases, the mensuration should be repeated in a few weeks or months, to note if the aorta is increased in size."

The chord which subtends the left aortic semicircle is defined as follows: It begins above at the point, where the convex line which marks the arch issues from the mediastinal shadow and begins its outline on the left pulmonary field, and ends below, at the point of intersection of the semi-circle with the contour of the pulmonary artery. (Line A.-A.' Figure 1.) The study of many cases has revealed this chord to be practically of the same size, or slightly narrower than the width of the transverse diameter of the arch. A pathological condition of that vessel is usually indicated if the width of this chord exceeds that of the transverse diameter of the arch. A study of the relativity of the length of the transverse diameter and the chord is of great importance in the measurements of the size of the normal aorta.

The right border of the vena cava usually extends normally 0.5 cm., to 1 cm., beyond the right border of the sternum; and the right border of the ascending aorta is adjacent to or slightly to the right of the mid-sternal line. The transverse diameter of the arch of the aorta corresponds to a line drawn from or near the mid-sternal line and ending approximately 0.5 cm., to the left of the left border of the sternum.

The transverse diameter of the great blood vessels may be increased, first, normally, by the height of the diaphragm, by the amount of abdominal tension and by the habitus of the subject; and second, abnormally, by hypertension.

As a rule, the size of the transverse diameter of the great blood vessels, that is, the combined width of the superior vena cava and the aorta, depends upon the stature of the individual, irrespective of his age. I am also of the opinion that the increase in the size of the aorta, attributable to increasing age, is greatly due to degenerative changes in that vessel. In my past experience, aged subjects with normal cardio-vascular systems, did not have any increase in the size of their aorta, that is, their aorta corresponded to the size it should have been normally in their earlier years.

The stockily built, wide chested, high diaphragmed subjects, with large but short sternum, have a wide transverse diameter of the great blood vessels. (Figure 2.) Charles Martin writes that it

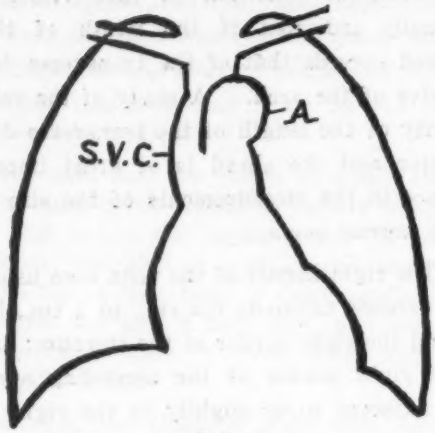

FIG. 2

Wide Chest, High Diaphragm, Well Supported Heart; Bulging Right Border of Superior Vena Cava, and Large Normal Aortic Arch.
From Author's article, Annals of Clin. Med., Vol. III, No. 8. Feb. 1925.

seems that a high diaphragm, is in itself, a cause of widening of the aortic arch. Those of the enteroptotic habitus, with elongated chests with slanting ribs, narrow costal angles, have narrow elongated sternums with diminutive ensiforms, and a narrow transverse diameter of the area of the great blood vessels. (Figure 3.) It is thus explained:—It is a proven fact that the heart is mainly supported by the diaphragm, and if the diaphragm sags, the heart becomes more vertical and assumes a more elongated shape or position, but if the phrenic muscle is placed high, this organ increases its obliquity, and assumes a more squatty and compact form. It is also an accepted fact, that the weight of a heart, which is poorly supported by the diaphragm, draws upon the vessels at its base, and causes them to undergo a certain elongation: and vice versa, a high diaphragm exerts an upward pressure both upon the heart and its vessels, which causes the vena cava and the aorta to become more compact, and to increase in width. In other words, in the first instance, the length and not the width, of the aorta is increased, and in the second, the breadth is increased, while the length is greatly diminished. The semi-circle of the arch is lessened in cases of vertical hearts, and widens as it assumes a more oblique position. In the latter case, the aorta is high, sometimes its upper contour reaches the supersternal notch, and is also relatively very wide due to the widening of its arch, and both the heart and its great blood vessels have the appearance of being more compact. (Figure 4.) These attenuations and elonga-

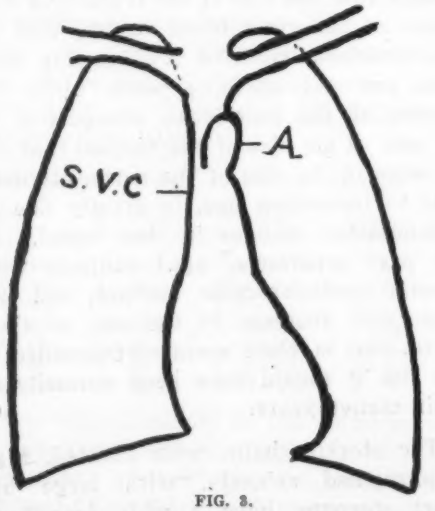

FIG. 3.

Elongated Chest, Low Diaphragm, Drop Heart, Elongated Narrow Superior Vena Cava and Ascending Aorta, Small Normal Aortic Arch.
—From Author's article, Annals Clin. Med., Vol. III, No. 8. Feb. 1925.

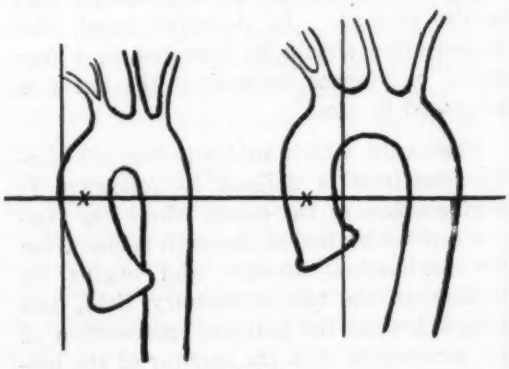

FIG. 4.

tions, in a minor degree, have been observed on change of position, and likewise during respiration. The traction on the aorta by the weight of the heart, is not generally of sufficient force to stretch or

attenuate that vessel, even in a very young subject, and certainly cannot possibly do so in an old one, because with advancing age its elasticity progressively diminishes. Contrariwise, the caliber of the aorta is not increased by the upward pressure caused by a high diaphragm. This traction on the aorta by the weight of a poorly supported heart, causes a lowering and narrowing of aortic hemi-circle; whilst the pressure of a well supported heart increases the width of the arch. The increased convexity of aorta thus produced, causes this vessel to press upon the superior vena cava and forces it to bulge to the right. Therefore in a thorax with a wide sternum and a high diaphragm, the heart being well supported, the right border of the superior vena cava bulges to the right and assumes a distinct convexity; but in an elongated chest with a low diaphragm, the heart being poorly supported, the right border of the vena cava straightens out, loses its convexity, and frequently becomes slightly concave.

Delherm and Chapron recently published their new "Radiologic Syndrome of Aortic Hypertension" wherein they give the following diagnostic signs of probable hypertension from a radiologic standpoint:

(1) The arch of the aorta is pushed up, its hemicircle is more prominent, and often is increased in size.

(2) The right border of the superior vena cava is more convex, which indicates that it is displaced to the right by the ascending aorta.

(3) The transverse diameter of the great blood vessels is greatly increased; but they also state that the enlargement of this diameter alone, wthout other signs of hypertension is of negative value.

They state that the aorta being a living structure once it has adapted itself to hypertension, does not readily return to its former shape and size, and although there may be at the time no indications of hypertension, their syndrome often indicates a former state of high blood pressure.

They claim that the aortic arch in children is always small, and that it increases in size with advancing years; and that the vena cava in children is vertical, is fairly convex in the adult, and that it increases its convexity in old age. They explain these menchanical modifications and changes in the aorta due to hypertension by the well known fact that increasing pressure in a flexible tube bent in the form of a circle, will cause the tube to unwind itself, and to straighten out, thereby, increasing the size of its circumference.

Here are presented for our consideration two positive mechanical factors that cause an enlargement of the area of the great blood vessels. One, the physiological, the upward pressure on the great blood vessels by a heart pushed up by the diaphragm; and the other, the pathological, the increase in width and shape of the aorta due to hypertension as explained by Delherm and Chapron.

Again I must repeat that the variations of the build and conformation of the body have a greater bearing on the inconstant size of the normal aorta than the subject's age, which is relatively insignificant and secondary in importance, provided the subject is free of cardiac vascular deterioration.

The width and length of the sternum vary with the different conformations of the chest and the various habitus and structures of the subject. Elongated flattened chests of the paralytic type, so commonly found in splenchnoptotics, have narrow sternums with diminutive or almost absent ensiforms, whilst broad chests have wide sternums with large well developed xiphoid processes. Morris says that the xiphoid process is the least developed part of the sternum, and is subject to many variations in form, being sometimes pointed, thin and again broad, etc. In fact the size of the ensiform is a good indication of

the size of the sternum, a wide sternum has a wide ensiform and a narrow sternum has a small or practically absent xiphoid process. These variations in the width of the sternum may be as much as 3 cm., in subjects of the same age and sex.

A well supported heart is found in a broad and short chest, which has a short, but large sternum, and a well developed ensiform; the diaphragm is high and the area of the great blood vessels is correspondingly large and short; and again, the reverse holds true, a pendulous heart is found usually in a paralytic chest, which has a long, but narrow sternum, with a diminutive ensiform; the diaphragm is sagged, and the area of the great blood vessels is long but narrow. As a rule the same factors which influence the size of the sternum affect the width and length of the arch of the great blood vessels. Both are dependent upon the some variations in the individual stature and chest conformation in persons grouped according to sex and age. A wide sternum with its large ensiform indicates that the area of the great blood vessels is wide but short, whilst a narrow and long sternum, with diminutive sternum, denotes a long and narrow area of these vessels. The width of the transverse diameter of the vessels at the base of the heart indicates the corresponding width of the aortic hemi-circle, and is a practical basi sby which its normality may be determined.

This correlation of the size of the great blood vessels with that of the sternum, as a basis for the determination of the normality of the size of the aorta, has to my knowledge, never been before expressed.

The topography of all organs is so affected that it is impossible to determine their normality unless the stature and build of the subject be considered. The variations of the size, shape, and position of the heart, liver, stomach, etc., as well as those of the great blood vessels and likewise the aorta depends on the individual factors. What would be considered a normal organ in one type of bodily conformation would be decidedly abnormal in another type. As a rule the same conditions modifying the size, shape and position of the heart, influence the size of the great blood vessels and the arch of the aorta.

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DISCUSSION.

Dr. J. B. Guthrie (New Orleans): This subject is more or less technical, and I am sure that everybody here has been as enlightened as I was by the discussion of Dr. Fossier. He has been an enthusiast on this subject for some time and has worked these things out, and we are very much in his debt for clearing up clinically a method by which we can arrive at the size of the aorta. I have had a certain amount of pride in the percussion method I use, and I thought I was reasonably skillful in percussing the heart, and the vessels, and I was content for many years to percuss down under the clavicle and arrive at the width which I thought was the clinical width of the aorta. You remember he brought out the idea that the vena cava increased with the size of the aorta. It is a fortunate thing for us clinically that such a thing does exist. I am convinced that we should not consider simply the dullness on either side of the sternum as the main factor of aortic width. More recently I have attempted to do what Doctor Fossier did not

tell you that he does, because he did not have time, and that is to make a differentiation between the vena cava and the aorta, and it is my opinion that it can be done. I have not given it up, and I have succeeded a number of times to my amazement. You think it cannot be done, that Doctor Fossier has hypnotized himself about it—you are afraid that you believe you are doing something that you do not do. But I believe clinically what Doctor Fossier says can be done in this manner.

The practical thing is that we can prove our methods on clinical examination so if we can get at this thing we will be able to send a larger percentage of our cases for radiographic examination. With some of us it is matter of routine, we have competent radiologists and departments where it can be done; but with some of us who are not so fortunately situated, and it would be a great boon to be able to say with a fair degree of certainty—there is dilatation of the aorta, and to what end? To the determination of the diagnosis of aortitis. It is vague at present. The literature confuses the picture of heart failure and aortitis. Heart failure very often goes with aortitis, but I feel as we enlarge our study in the line of such instruction as we have in the literature, we will be misled by attributing the symptoms of myocarditis to aortitis, because the two very often co-exist.

A number of years ago I worked on a study of the thoracic changes of ascites, and one of my findings was that in ascites we have something like this—high diaphragm and increased aortic width. That was pretty constant when we evacuated the ascites. It was one of the signs that we put down as a thoracic sign of ascites, that increase of the aortic width and the diminution after evacuation. That is beautifully explained in the matter of the high diaphragm. That is another point that is vastly important. We cannot have a coefficient that expresses the normal width of the aorta unless we have some equation which shall express the angle of the aorta. It is futile to say the aorta width is so many centimeters, and not take into consideration the other factors of the age and the build of the individual. There are many phases about Doctor Fossier's paper that we can think about with a great degree of stimulation. I think we are very much indebted to him for his zeal in making these studies.

Dr. H. P. Jones (New Orleans): I want to express my deep appreciation of the work Doctor Fossier has done. It is certainly very helpful. You remember two years ago I read a paper on this same subject, but my measurements included the total width. At that time the refinements of differentiation were not known, or at least I had not seen them. To know what probably is the normal size of the aorta in certain persons helps tremendously in making a diagnosis of some abnormality of the aorta, and the work is intensely important.

Dr. A. E. Fossier (closing): It is my hope to bring out strongly the use of percussion in delineating the size, shape and position of the aorta. Unfortunately, in this day, the teaching of physical diagnosis has been greatly neglected, and has been too frequently left to teachers who are not expert in its use. Again many of our textbooks belittle its results, and but too often reflect the skill, or lack of skill, of the author as a percussor. This creates a wrong impression as to the accuracy of the method. This fact was recently demonstrated in an abstract of one of my articles in Radiology, issue of April, 1925, in which the abstractor used the following quotation, "Cabot states that it is impossible to outline the heart by percussion, and one has only to try it with his eyes shut to see how wide of the mark he will come." Such statements, coming from such a noteworthy source, are unfortunate, because they are incorrect and misleading.

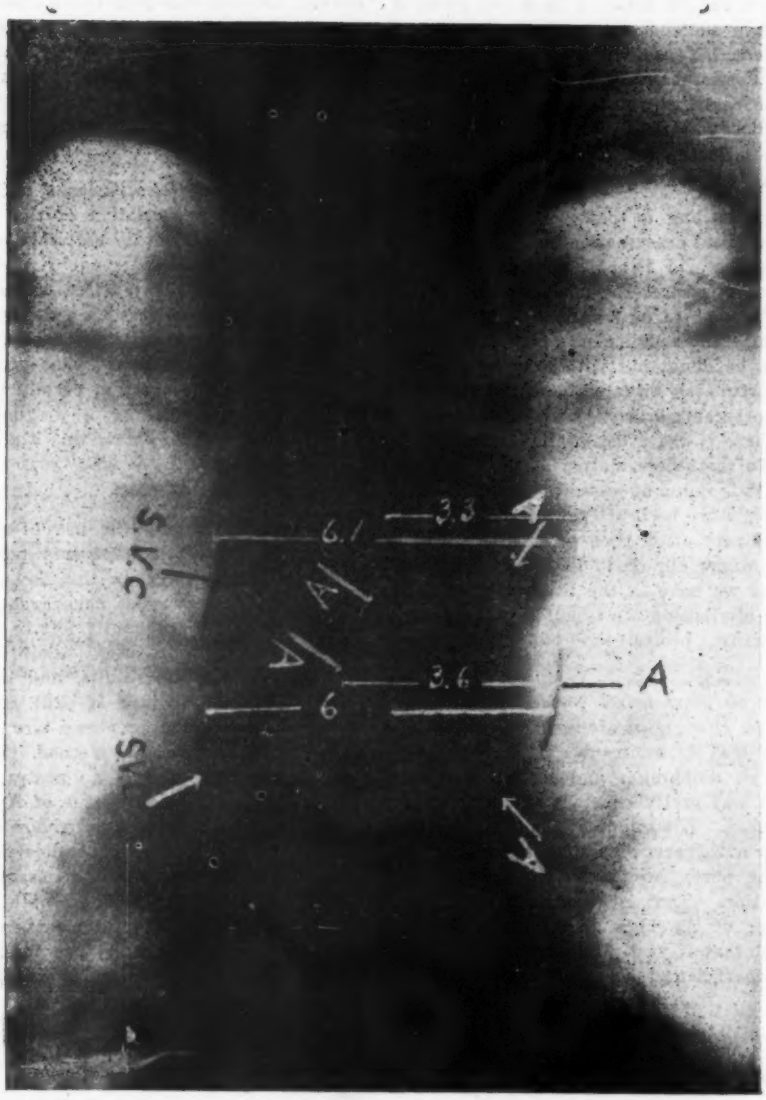

PLATE 1. NORMAL AORTA AND SUPERIOR VENA CAVA.

Measurements by Dr. Amedee Granger.

Width of arch of aorta by percussion: 3.6 cm.
Width of arch of aorta by Roentgen-ray: 3.3 cm.
Width of aorta and superior vena cava by percussion: 3.3 cm.
Width of aorta and superior vena cava by Roentgen rays: 6.1 cm.

—From Author's article in Annals of Clinical Medicine, Vol. IIII, No. 8. Feb. 1925.

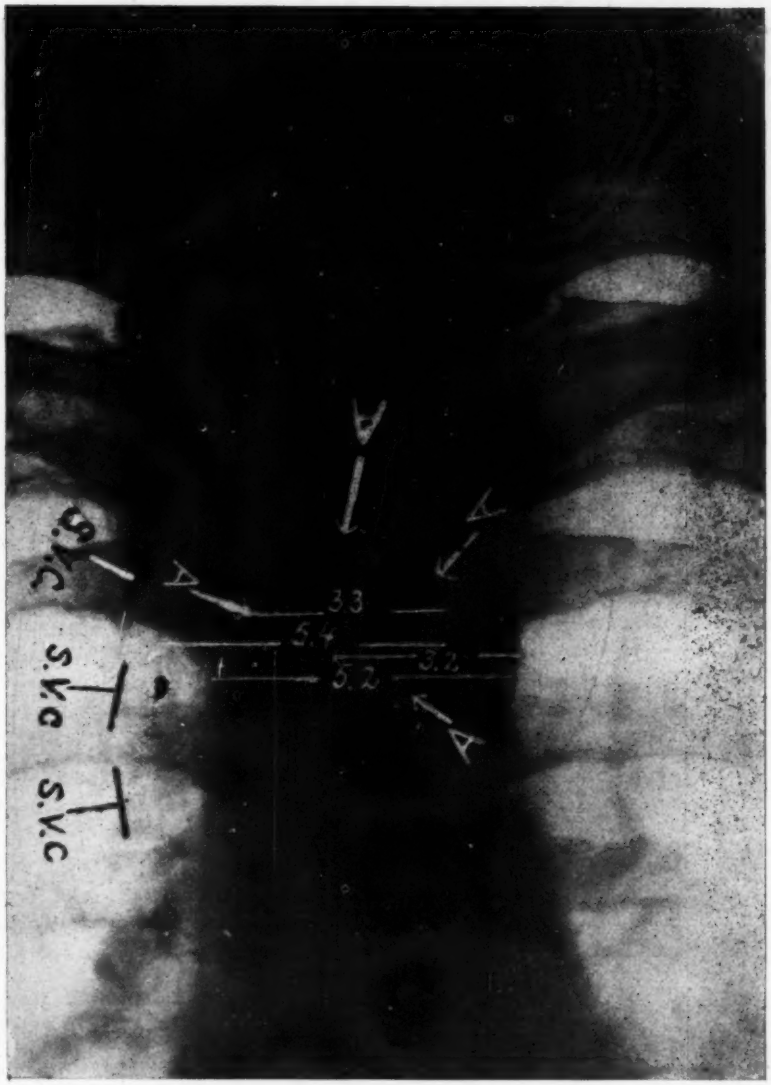

PLATE 2. NORMAL AORTA AND SUPERIOR VENA CAVA.

Measurements by Dr. Amedee Granger.

Width of arch of aorta by percussion: 3.3 cm.
Width of arch of aorta by roentgen-rays: 3.2 cm.
Width of aorta and superior vena cava by percusion: 4 cm.
Width of aorta and superior vena cava by roentgen-rays: 5.2 cm.
—From Author's article in Annals of Clinical Med., Vol. III, No. 8, Feb. 1925.

PLATE 3. NORMAL AORTA AND SUPERIOR VENA CAVA.

Measruements by Dr. Amedee Granger.

Width of arch of aorta by percussion: 3.4 cm.
Width of arch of aorta by roentgen-rays: 3.3 cm.
Width of aorta and superior vena cava by percussion: 5 cm.
Width of aorta and superior vena cava by roentgen-rays: 4.9 cm.
—From Author's article in Annals of Clinical Med., Vol. III, No. 8, Feb. 1925.

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THE PASSING OF THE CULTS.

News comes that "the first annual report of the Board of Chiropractic Examiners of the State of California, 1923-1924, discloses the fact that any chiropractic school, in order to be in good standing and to have its graduates admitted to examination in California, must include in its curriculum the study of elementary chemistry and toxicology, 100 'hours'; bacteriology, 100 'hours', and obstetrics and gynecology, 100 'hours'. An 'hour' is defined as forty five minutes 'or the equivalent thereof'.(1)

This seems to be another instance of history repeating itself. It has not been so many years since the osteopaths (who seem to be closely akin to the chiropractors—though each denies the relationship) began to include such things in their curriculum. The Journal of the American Medical Association is undoubtedly correct in its surmise that this is but a method to obtain "the unreserved right to enter the practice of medicine and surgery by its own carefully-planned back door."

Since we have seen the curriculum, as taught by various other cults and "isms," expanded, it may be safe to infer that in the fullness of time we shall see the same thing happen with the chiropractors. Homeopathy has finally accepted bacteriology and other scientific teachings of modern times and has now practically merged into scientific medicine, with the result that year by year we hear of the closing of colleges which taught nothing but homeopathy.

Scientific facts are and always will be the same to any impartial observer. No one has even suggested the existence of cults or "isms" in mathematics. We have never heard of homeopathic astronomy, and it is to be doubted very much that any one will ever discover the existence of osteopathic biology, or chiropractic geology.

It seems, then, that even the cults and "isms" go through a process of evolution. Time will tell.

(1) Ed., Jr. A. M. A., v. 85: 440 (August 8) 1925.

LIGHTING THE HOME.

Poor lighting rather than good lighting is the rule in most of the homes in our country, according to a report of the Eye Sight Conservation Council disclosing conditions in homes and schools.

While lighting conditions generally are far from what they should be in the industrial field, the households and the school rooms are neglected to an extent that is harmful to the eyes of the human race.

"One reason for this," according to the Council, "is that in a great many homes the lighting equipment has not been changed to keep pace with the rapid development in the art of lighting.

"A great many of these old residences are rented and the occupants are reluctant to make improvements at their own expense, even though they recognize the inadequacy of the faulty illumination. Such conditions, however, can usually be modified with a small expenditure so that, to a considerable extent at least, the advantage of modern illumination may be enjoyed.

"One of the most common evils found in home lighting is the bare lamp. It is usually so low as to be directly in the line of vision, causing eyestrain, at the same time providing poor illumination. There are specially designed fixtures for correcting not only this condition but also the many other objectionable features of the old style equipment.

"Where the present installation does not provide sufficient light, portable lamps in great variety are available and can be used advantageously. Floor lamps, table lamps and small ornamental lamps in addition to augmenting the lighting are appreciated by the householder because of their flexibility and decorative value.

"Although the essential requirement of lighting in the home is the elimination of eyestrain, the decorative possibilities should not be overlooked. The most pleasing and comfortable effect is produced by skillfully combining utility and ornamentation.

"Artistic shades and colored lights are mediums of expressing individuality in furnishing our homes. However, great care should be taken in the use of colored lights, in order not to defeat their real purpose. Colored lamps and dimly shaded lamps are not intended for reading and close work, for eyestrain is caused by improper and insufficient light."

"Glare," says the report of the Eye Sight Conservation Council, "is one of the most insidious causes of eyestrain, and is "unquestionably the most prevalent and objectionable concomitant of improper lighting."

Experts find difficulty in defining glare. One definition is "light out of place." Another is "glare in any brightness within the field of vision of such a character as to cause discomfort, annoyance, interference with vision or eye fatigue."

Science has revealed three chief sources of glare—excessive brightness, excessive volume of light and excessive contrast. Excessive brightness of light source is, the Council's report says, now believed to be the worst offender.

Methods of lighting the home, to promote health and comfort, are becoming a vital factor of domestic science, continues the report, distinct treatment being demanded for living rooms, dining room and kitchen.

TREATMENT OF SYPHILIS.

The indiscriminate use of the word "cure" in the treatment of syphilis should be discontinued and in its stead the patient should be made to think merely of an arrested condition as in tuberculosis. According to a report just made public, such is the opinion expressed by the conference of the United States Public Health Service and State venereal disease control officers last December at Hot Springs, Arkansas. This conference advised that persons undergoing treatment for syphilis should expect and seek observational control at appropriate intervals, and under proper medical care, throughout a period of years—instead of considering themselves cured after a few months' or a year's treatment—in order to avoid the late involvement of the heart, blood vessels and nervous systems. The adoption of this attitude by the conference is disclosed by the report of the Hot Springs meeting which has just been published in pamphlet form by the Division of Venereal Diseases of the United States Public Health Service.

According to the printed report, the conference passed resolutions concerning the policy, management, methods and standards

of examination, diagnosis and treatment to be followed by clinics supported in whole or in part by Federal or State funds. The report says that medical responsibility for the health of a patient who has acquired syphilis or gonorrhea is not discharged by mere routine treatment during the infectious stage, but extends to the prevention of crippling, degenerative lesions during the patient's later life. One of the first essentials to such prevention is complete observational control with periodic re-examination. It is urged that such systematic checking must be carried out through a period of years. Such a course is necessary, says the report, because a complete relapse of a patient treated for syphilis may occur in any case, however apparently hopeful at the start.

Among other things, the conference found that three years may be prescribed as the average period of treatment for the early case of syphilis before it is placed on observation. Five years has been widely accepted as the lapse of time required to reduce the infectious possibilities to a point where marriage may be contemplated.

BREATHING CAPACITY IN WOMEN.

There is apparently an important connection between breathing capacity and delinquency among women.

Recent investigations by Dr. Frederick L. Hoffman, consulting statistician of the Prudential Insurance Company of America, into the present day human physique, with a due regard to age, sex and race, has revealed among other interesting results the striking fact that normal women usually have a chest expansion about three centimeters greater than delinquents at corresponding ages.

"While delinquents apparently have a slightly better general physique than normal women, as indicated by a somewhat larger chest and abdominal circumference, their breathing power is distinctly less," says Dr. Hoffman. "And this vital inferiority," he adds, "may have an important bearing upon mental development, for otherwise physically delinquent women exceed rather than fall below the averages for the different bodily proportions as ascertained by painstaking measurements."

Dr. Hoffman's investigation included a larger number of individuals and has covered a considerable period. In normal women at 30 years of age the chest expansion averages 11.2 centimeters against 9.8 for delinquents. At ages beyond this, the difference is still more marked, being 10.2 for normal women and 7.6 for delinquents. Expressed in inches the differences are:

Under 30—Normal women, the chest expansion is 4½ inches; delinquent women, 4 inches.

Over 30—Normal women, the expansion is 4 inches; delinquent women, 3 inches.

Only in breathing capacity did the measurements disclose an inferiority among delinquents. Thus, says Dr. Hoffman, the abdomen, which is a fair index of nutrition, was 88 centimeters circumference for normal women under 30 years, while for delinquent women it was 90 centimeters. Among normal women over 30 the abdominal circumference was 94 centimeters against 93 among delinquents. Average weight under 30 was 125 pounds for normal women and 130 for delinquents; over 30 the corresponding weights were 142 and 135 pounds.

Incidentally, Dr Hoffman says he is decidedly of the opinion that the tendency toward increased weight with advancing years among American women is to be viewed with apprehension as indicative of premature senility and greater susceptibility to a variety of serious organic diseases.

The data from which he derived his findings and conclusions included more than 4,000 measurements of both sexes of Caucasians, Negroes, Caribs and Indians of North, Central and South America. These measurements were all made under uniform methods either by himself or under his direction through the co-operation of health officers and physicians in charge of reformatories and correctional instiutions.

J. J. HARALSON—An Appreciation.

Just as we go to press comes the news of the sudden death of Dr. J. J. Haralson, President of the Mississippi State Medical Association, 1924-1925.

Every one of us, in the face of a trial like this, feels the inadequacy of words, but those who have known him, who have worked with him for years in the State Association, and who have been in the habit of looking forward to the pleasure of seeing him from year to year at each Association meeting, can not help but give expression to their sense of loss in a case like this. A gentleman and a doctor of the old school, he was widely and well-known throughout the state. Let us pause, then, for a moment, in order to show reverence to his memory, which must always be a sacred thing to us.

The Mississippi State Medical Association, and the New Orleans Medical and Surgical Journal, take this occasion to offer their sympathy to the bereaved family.

NEWS AND COMMENT

DEPARTMENT EDITORS.

Lucien A. Ledoux, M. D., Louisiana.

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LOUISIANA.

"Every man owes some of his time to the upbuilding of the profession to which he belongs."
—Theodore Roosevelt.

BULLETIN OF THE ORLEANS PARISH MEDICAL SOCIETY.

Since our last report the Society has had one meeting of the Board of Directors and one meeting of the General Society which has a quarterly meeting.

The following Doctors have been elected to active membership: Dr. J. E. Doussan, Dr. Carl Granberry and Dr. Curtis H. Tyrone. Dr. J. T. Halsey and Dr. E. F. Salerno were reinstated to membership.

The following applications for active membership are pending: Dr. W. F. Henderson, Dr. A. J. K. Genella and Dr. A. J. Azar. The following applications for Interne Membership are pending: Drs. M. W. Miller, S. B. McNair, F. J. Beyt, J. F. Lucas, J. N. Lockard, M. A. Young, Jr., J. A. Johnson and R. C. Hill.

A contract with the New Orleans Medical and Surgical Journal terminating in 1926 has been signed, the subscription allotment being $300.00 a year.

The proposed Pre-Convention Clinic which was to be held under the auspices of this Society has been indefinitely postponed owing to information received to the effect that railroad certificates will not be issued until November 5th. They call for the shortest routing possible and as a result very few physicians will be able to attend the program arranged for them.

The Legislative Committee of this Society has been requested to study the pending and projected legislature with the view of preparing a program for the next Legislative Session in 1926.

Final action of the Society in regard to the Koch Cancer Treatment was contained in a motion made at the General Meeting, October 12th, 1925, by Dr. F. W. Parham and seconded by Dr. Landry, "That the reports of the Judiciary Committee and the Board of Directors be considered entirely satisfactory to the Society." The motion was unanimously carried. In addition to this motion Dr. Parham stated that from this day Dr. Carroll W. Allen not only renounced his connection with Dr. Koch and his treatment but had given up any patients that were under his observation or that had been referred to him.

The following is a report of the Cancer Committee of the Hotel Dieu Staff:

"Because the laity of this City and State have become much excited and interested in the Koch Cancer Cure, and because certain surgeons and physicians of standing in this community have used and suggested the investigation of this cure, the Staff of the Hotel Dieu of New Orleans, Louisiana, has appointed a Committee to investigate this alleged cure. The Committee accepts this mandate, in no sense in rebellion or criticism of the findings of the American Medical Association or of the American College of Surgeons, but in order that the Staff of this hospital may have first hand knowledge of the matter, so as to protect and benefit both themselves and their patients.

"Your Committee has met some eighteen times during the last six months. It has examined directly and indirectly some fifteen cases of cancer, and has treated, or observed the treatment of these cases by the Koch Method. The diagnosis of these cases has always been controlled by microscopic section, with the exception of two cases, nevertheless the committee feels that there can be no qustion that they were cancerous. The treatment, as outlined by Koch, has been rigidly adhered to. The cases treated have been in all stages of the disease, both early and late. Some of the cases have had Radium, others have had no treatment, and a few have had some surgery and Radium. The Committee has heard of other cases in this community, that have had the Koch treatment, and has endeavored to keep informed of these cases.

"After an impartial review of the evidence accumulated during the last six months of investigation, this committee concludes that the Koch treatment has no merit; that it is probably inert, and that the so called "reactions", occur in the majority of cases of cancer; that it is harmful and probably shortens life, inasmuch as the rules of treatment laid down by Koch forbid the use of well recognized therapeutic measures which relieve pain, sustain body weight and vigor and etc.

"This Committee recommends to the staff that this Koch Treatment be forbidden in the Hotel Dieu." Louis Levy, M. D., Chaille Jamison, M. D., M. Couret, M. D., J. T. Nix, M. D., J. J. Wymer, M. D.

The above report was read at the general meeting of the Society, October 12th, and was ordered to appear in the Journal as a part of this bulletin.

A new automobile emblem of the American Medical Association has been adopted by the Society as its official emblem. These may be secured by making application to the American Medical Association.

The Committee appointed to devise ways and means of financing a projected advertising campaign entitled, "Pay your Doctor", is composed as follows: Dr. F. M. Johns, Chairman, Dr. Emil Bloch, Dr. Paul J. Gelpi, Dr. J. E. Dupuy, Dr. E. A Ficklen and Dr. W. A. Reed.

Members intending to go to Dallas may make reservations by applying to this office

The attention of the membership is called to the scientific meeting to be held November 23rd at which time Dr. George Gelhorn of St. Louis will address the Society under the auspices of the New Orleans Gynecological and Obstetrical Society. Dr. Gelhorn has stated that he desires as very open discussion of his paper as possible.

The program to the end of the year is as follows:

Monday, November 2nd, Board Meeting.

Monday, November 9th, Scientific Meeting and election of Delegates to Louisiana State Medical Society.

Monday, November 23rd, Scientific Meeting and Nomination of Officers for 1926.

Monday, December 7th, Board Meeting.

Saturday, December 12th, Election of Officers.

Monday, December 14th, Scientific or Clinical Meeting.

Monday, December 26th, Scientific Meeting.

PROF. CASTELLANI COMES TO TULANE.

Just as this issue of the JOURNAL goes to press we have been informed by Dr. C. C. Bass, dean of the Tulane school of medicine, that Dr. Aldo Castellani, professor of Tropical Medicine at the London School of Tropical Medicine, has accepted the chair of tropical medicine at Tulane and will arrive from England during November to take up his work here. Dr. Castelanni is a world authority on tropical medicine and tropical research and Tulane is indeed to be congratulated upon getting him. Dr. Castellani graduated from the University of Florence, Italy, that being his native land. Early in his career he was called to London to serve in the tropical medicine school there. He has also occupied the position of director of the Ross Institute of Medical Research, London.

There was a meeting of the Executive Committee of the Louisiana State Medical Society in New Orleans on October 2nd. Other than disposing of the routine matters, it became necessary for the Executive Committee to change the dates of the meeting of the Louisiana State Medical Society from April 19th to 23rd, to April 15th, 16th, and 17th, 1926. The Meeting will now be on the last part of the week preceding the American Medical Association, which is to be held in Dallas, thus affording all those who might desire to take in both meetings in one week's time away from the City.

The Council of the Louisiana State Medical Society also held one of their regular meetings at this time.

On the afternoon of October 2nd, the Tuberculosis and Public Health Association of Louisiana held one of their regular meetings, attended by the officers of the organization, and the officers and Councilors of the Louisiana State Medical Society.

The Louisiana State Board of Health held one of their regular meetings in New Orleans. One of the most important things considered at this meeting of the State Board of Health was the part to be played by Louisiana in the campaign of the eradication of mosquitoes. The State Board of Health attended the Conference of Louisiana, Mississippi and Alabama, which was held in October. At this Conference, which was presided over by Martin Behrman, Mayor of the City of New Orleans, it was decided that a mosquito survey of the three states should be made; secondly, that it should be made under government supervision; thirdly, that the expenses of the survey should be borne by money raised in Louisiana, Mississippi, and Alabama.

We have every reason to believe that great good is to follow the institution of this important campaign for the levigation of being bothered by mosquitoes.

In attendance at this Conference, other than prominent men of the three states, were representatives from various railroads of this Section, prominent among whom were G. G. Dowdall, chief surgeon of the Illinois Central Railroad. This railroad is taking active steps in the development of this section of the country, and is sure to lend their support and co-operation in this campaign of mosquito eradication.

It is with a great deal of regret that we learn of the illness of our President, Dr. E. M. Ellis of Crowley, who for the past three or four days has been confined to his bed. We wish for him a speedy recovery.

Dr. George Gelhorn of St. Louis will be the guest of the Orleans Parish Medical Society at their regular Scientific Meeting to be held Monday, November 23rd. Dr. C. Jeff Miller will also appear on this program. The title of both papers will be announced later.

This meeting promises to be well attended, not only locally, but from outside of the City, and it is hoped that these very interesting papers will be freely discussed.

TULANE GRADUATE COURSE.

According to the schedule just issued, the first of the six weeks course in the Graduate School of Medicine, Tulane University, begins November 2nd.

At a recent meeting in New Orleans, the State Coroner's Association was formed, electing Dr. George Roeling, coroner of the City of New Orleans, President; Dr. Marvin Cappel, Alexandria, Vice-President, and Dr. Emile Bertucci, New Orleans, Secretary-Treasurer.

Dr. John Spelman, Superintendent of Touro Infirmary, and Dr. Wm. W. Leake, Superintendent of Charity Hospital, New Orleans, are attending the Annual Meeting of the American Hospital Associations.

DR. PAUL GELPI HEADS CHARITY STAFF.

The Annual Meeting of the Charity Hospital Staff was held Tuesday, October 13th in the Miles Amphitheatre, Charity Hospital. The reports of the Surgical and Medical Sections were presented. The Retiring President, Dr. H. W. Kostmayer, read his report in which he stressed that the entente cordiale existing between the Board of Administrators and the Staff still prevailed and that a number of progressive steps had been made during the year, chief among which was the establishing of a Cardio-electrograph Clinic, the completion of the first modern hospital unit and the driving of the first piles for the John Dibert Tuberculosis Hospital. He also informed the Staff that data had been compiled by the Board of Administrators regarding Hospital Abuse, and that in view of the nearness of the next Legislative Session that definite arrangements should be made to correct the abuse by legislative enactment.

Dr. W. W. Leake, Superintendent, addressed the Staff outlining the progress made in the Hospital during the year, and expressing his gratitude for the co-operation unstintingly given to him which had greatly facilitated his tasks.

The election of Officers for the ensuing year resulted as follows:

President, Dr. Paul Gelpi.

Vice-President, Dr. Jerome E. Landry.

Secretary-Treasurer, Dr. Lucien A. LeDoux.

Dr. Chaille Jamison and Dr. A. E. Fossier, elected for one year.

Dr. H. B. Gessner and Dr. Randolph Lyons held over for the second period of their two year term as members of the Board.

Examinations of candidates for entrance into the Regular Corps of the U. S. Public Health Service will be held at the following named places on the dates specified:

At Washington, D. C., December 7, 1925; at Chicago, Illinois, December 7th, 1925; at New Orleans, La., December 7th, 1925; at San Francisco, Calif., December 7th, 1925.

NURSING STANDARDS, MASSACHUSETTS.

A committee of Massachusetts nurses and physicians are formulating standards for prenatal and obstetric nursing for the nurses of the State Division of child hygiene. Dr. Mary Lakeman is chairman of the committee and Dr. Robert L. DeNormandie is advising.

ST. RITA'S CLOSES.

After a five years period of struggle against many adversities, the St. Rita's Surgical Infirmary, of New Orleans, of which Dr. Milton P. Tilly was Surgeon-in-Chief has closed its doors. Dr. Tilly deserves much credit for his tenacity of purpose in keeping this institution going throughout the period in which it has well served its patients and staff. During this period Dr. Tilly promoted the Sisters of Mercy, an order which had been in the State for more than fifty years without a Hospital Service. These Sisters had served at St. Rita's through the period of its existance and did much toward the furtherance of its success. Recently through the munificence of Mrs. Soniat, there has been given to the City the Leonce M. Soniat Memorial Hospital, and the Sisters of Mercy who were formerly at St. Rita's have now taken over the Soniat Memorial. Now through further efforts of Doctor Tilly, the Sisters of St. Joseph, who have been in Louisiana for over seventy years, and who are known as the great hospital order of France, will be given charge of the new Archdiocese Hospital which is soon to be erected in Carrollton.

MISSISSIPPI.

Vicksburg, Mississippi,
September 18, 1925.

Dear Mr. Editor, News and Comments:

Will you kindly pause in your hot chase for Mississippi News for your "organ" long enough to remind our doctors that the Legislature meets in January and that the Committee on Legislation has a "Lye Legislation" bill that needs support?

Lest your massive brain has failed, so far, to get the true inwardness of this bill, permit me to tell you:

1. That commercial lye is marketed in innocent-looking packages.

2. That as there is nothing on these packages to call attention to the deadly character of their contents, they are frequently left lying around where children get at them.

3. That as their contents are also innocent in appearance, children frequently eat it.

4. That within a few minutes after such a meal, somebody realizes there is hell to pay.

5. That the child who dies shortly after such a meal is really luckier than the one who survives.

6. That the A. M. A. has asked legislation in this matter, and the A. M. A. committee and the lye manufacturers have agreed on a model bill.

7. That this bill provides for a suitable poison label so that the purchaser of lye may be warned of his possible danger.

This bill has been passed in a number of states—it is not being fought in any way. Provided it does not die of inertia, it will pass any legislature. But it is up to the doctors to treat the inertia. Kindly put a little kick into this "comment" and pass it on to the Mississippi doctors.

Anyone who fails to support it may be the cause of some kid dying—it's just possible that it may be his own kid. Yours,

E. F. HOWARD.

(The Editor feels that the above could not be improved. We therefore publish this screed in the hope that the medical profession of Mississippi will not let this bill die of inertia.)

DR. JAMES JORDAN HARALSON.

Dr. James Jordan Haralson was born in Scott County, Mississippi, December 31, 1857. He moved in early childhood to Newton County, Mississippi, and was educated in the old Cooper Institute, Daleville, Mississippi. After clerking in the general store of Eastland & Thornton at Lake Mississippi, he acquired ownership of a drug store in Lake, which he later sold to take a position in a drug store in Meridian, Mississippi. From there, he matriculated in the Louisville Medical College at Louisville, Kentucky. On graduation he practiced his beloved profession at Conehatta, Mississippi, until 1892, at which time he was appointed quarantine officer at Ship Island, serving one year, being the last such officer under the State administration, the United States Marine Hospital and Public Health Service taking the work over at that time. Resuming practice in Conehatta, Mississippi, he continued in active practice until his death on October 12, 1925.

Dr. Haralson was a member of The American Medical Association, Southern Medical Association; Tri-State Medical Association; Tri-State Railway Surgical Association; Mississippi State Medical Association; Secretary of the Mississippi State Medical Association, 1904; Scott County Medical Society; President, Mississippi State Medical Association, 1924; Mississippi State Board of Health at the time of his death; Examiner for the Draft Board of Scott County and Member of the Medical Advisory Board of this District during the World War; Local Surgeon A. & V. R. R. for twenty-six years; Chairman of the Scott County Democratic Executive Committee for many years, and Value Director of the Bank of Forest for more than twenty years. He was prominent in all Masonic Bodies of this State, being Supreme Representative Hamasa Temple, Mystic Shrine, 1919; Master China Grove Lodge for a number of years; Master Forest Lodge for nearly twenty years, and at his death he was Worthy Patron Forest Chapter No. 168, Order Eastern Star; also an active member of Excelsior Lodge 86, Knights of Pythias. He was President of the Board of Managers of the Masonic Home of Mississippi. Of all his activities this last was no doubt nearest to his heart. The care and protection of the orphans of his fraternal brothers was his greatest concern. He loved these helpless little ones.

It was while attending a meeting of this Board in Meridian on the night of the 9th that he had an attack of angina pectoris. Recovering temporarily, he returned to Forest on Saturday morning he had a sinking spell in the W. S. Vance Drug Store where he kept his offices. Sunday afternoon and night he had apparently recovered and was in a cheerful mood, chatting with his family and friends. Monday morning, feeling well again, he announced his attention of going to his office. Against the protest of his wife he went out to his car, and, the car not moving, Mrs. Haralson suspected something wrong, and went out to find him sitting at the wheel with life extinct.

Funeral services were held in a beautiful and impressive manner in the Forest Presbyterian Church, in which Dr. Haralson had served as deacon for many years, at 2:30 o'clock on Wednesday afternoon. A large congregation of friends from all parts of the state were present. Services at the grave were under the auspices of Forest Lodge F. & A. M. 437, Grand Master Ellice with other grand officers officiating.

RESOLUTION.

INASMUCH as it has pleased Almighty God in His divine wisdom to take unto Himself our fellow laborer,

Dr. J. J. Haralson, of Forest Mississippi, member of the State Board of Health, member of the Scott Medical Society, formerly president, and for many years, one of the most loyal and efficient members of the Mississippi State Medical Association, be it, therefore,

RESOLVED, by the Warren County Medical Society that we do express our appreciation of the great services of Dr. Haralson to the cause of organized medicine and through it to the people of the State, and be it further

RESOLVED, that a page in the minutes of this Society be set aside for these resolutions and that copies be sent to his bereaved family, to the State Association, and to the official publication of the State Association.

E. F. HOWARD,
LEON S. LIPPINCOTT,
For the Society.

Dr. J. Sidney Eason, Health Officer of Tate County, reports that during the month of August sixty patients were given typhoid vaccine; during September one hundred and thirty-eight were vaccinated against typhoid, and six against smallpox; vaccine for six hundred and sixty-five patients was furnished to other doctors throughout the county. All business places in the county were visited, and those found in unsanitary conditions were condemned, twelve to fifteen slaughter-houses were ordered built, the poorhouse and jail were repainted and repaired, new bedding put in both institutions, and other improvements made.

The Health Officer also wrote twenty-five letters in regard to health matters, thus stimulating those discussions which result in the education of the citizens along the lines of sanitation.

The County Health Officers' Conference will not be held during Fair Week this year as usual. The meeting of the American Public Health Association conflicts. Several of the County Health Officers' conferences will be held early in December. The State Board of Health will hold a meeting at the same time, clearing up all matters for the year.

Dr. R. N. Whitfield, Director of the Bureau of Vital Statistics, entered Johns Hopkins on October first for a course in Vital Statistics.

Mr. Tom Townsend, State Sanitary Inspector, State Board of Health, for the Northern District, has resigned to accept a position with the LeFlore County Health Department as City Inspector for Greenwood and Itta Bena.

Twenty-one counties in the State have made appropriations for health work on a full time basis.

Bureau of Sanitary Engineering—State Board of Health.

The Bureau of Sanitary Engineering of the Mississippi State Board of Health maintains for the service of the people of Mississippi the following divisions:

Division of Water and Sewage; Division of Malaria Control; Division of Municipal Inspection.

The services rendered by these divisions are chiefly technical advice and assistance on all matters of sanitation and the enforcement of the sanitary regulations of the State Board of Health.

These activities may be summarized as follows:

Division of Water and Sewage.

1. Investigation of existing water supplies and sewerage systems and securing improvements and corrections when needed.

2. Investigation and approval of proposed new or improved water supplies and sewerage systems, including water purification and sewage treatment plants.

3. Promotes installations of new water supply and sewerage system and alterations to existing systems.

4. Investigation and certification of water supplies for use of common carriers in cooperation with the United States Public Health Service.

5. Examination and advice relative to water supplies and sewerage systems of state institutions and schools.

6. Sanitary surveys of municipalities and advice relative to waste disposal.

7. Investigations of sanitary conditions of school buildings.

8. Inspections and advice relative to rural sanitation.

9. Sanitary inspections of camps, resorts, and watering places.

10. Examination and advice relative to public swimming pools.

11. Laboratory service through co-operation with the Hygienic Laboratory, including examination of water and sewage, etc.

12. Investigation of disease outbreaks that may be water borne, in co-operation with other d partments.

13. Publishes and distributes free bulletins on the Sanitary Privy, Sewage for Farm Homes and Unsewered Communities, Water Supplies for Rural Homes, and furnishes free, plans for sewage disposal systems for schools, courthouses, etc.

Division of Malaria Control.

1. Investigations and studies on the prevalence of malaria.

2. Co-operation with full-time County Health Departments in the organization and institution of a county-wide anti-malaria program.

3. Renders advisory aid to municipalities in the inaugurating of mosquito eradication campaigns.

4. Publishes and distributes free, literature on malaria, its cause, prevention, and cure.

5. Works to prevent the creation of new man-made mosquito breeding places.

6. Renders advice to road and construction crews on the prevention and cure of malaria.

7. Educational work by means of addresses, exhibits, motion pictures, correspondence, etc.

Division of Municipal Inspection.

1. Inspection of food vending establishments and public service places.

2. Enforce the sanitary regulations of the State Board of Health.

3. Institute court proceedings against violators of the sanitary laws.

4. Investigates complaints and secures corrections of nuisances affecting the public health.

Dr. J. C. Inman, of Hosford, Florida, began work as Assistant Medical Director of the Hinds County Health Department on September 20th. Dr. Inman is a graduate of the Medical Department, University of Virginia.

Dr. C. W. Norwood, Corinth, Mississippi, has returned from Chicago where he did some postgraduate work.

Dr. C. F. Gilbert, Corinth, Mississippi, is taking a two weeks' vacation, and will visit clinics in the East.

Dr. W. M. Robertson, Rienzi, Mississippi, is attending the National Convention of the American Legion in Omaha, Nebraska, this week.

The quarterly meeting of the Homochitto Valley Medical Society was held in Natchez on October 8th, with the president, Dr. C. E. Catchings, in the chair.

Miss Gladys Eyrich, of the Division of Mouth Hygiene, Mississippi State Board of Health, addressed the Society.

The election of officers for the year 1926 resulted as follows:

President—L. H. Lamkin, Natchez.

Vice Presidents—W. H. Aikman, Adams County; C. W. Stewart, Amite County; L. W. Walker, Franklin County; B. R. Clark, Jefferson County; J. W. Brandon, Wilkinson County.

Secretary-Treasurer—L. S. Gaudet, Natchez.

Dr. W. H. Aikman was re-elected as member of the Committee of Medical Defense.

Delegates—E. E. Benoist, Adams County; W. R. Brumfield, Amite County; C. E. Mullins, Franklin County; J. C. McNair, Jefferson County; C. E. Catchings, Wilkinson County.

A committee of Drs. E. E. Benoist, Chairman, J. C. McNair and J. S. Ullman was appointed to investigate the possibility of establishing a library for the Society in Natchez.

Plans were adopted for holding a special meeting of the Homochitto Valley Medical Society in Natchez, at 4 P. M., of November 12th, at which time a lecture by Dr. Cooper, of the American Birth Control League, will be given. Our colleagues, both in Mississippi and Louisiana, are cordially invited to attend this lecture.

BOOK REVIEWS

A Compend of Diseases of the Skin: By Jay Frank Schamberg, A. B., M. D. Seventh Edition, Revised and Enlarged.. Philadelphia F. Blakiston's Son & Co. 1925.

This is a complete summary of the more important affections of the skin. The author has followed in this revised edition as in his first edition Duhring's classification. The work is intended for a quick, ready reference for the general practitioner, the student, and as a key to the study of Dermatology.

The author outlines on several instances a very complete differential diagnostic chart. In the group of inflammations he differentiates the different forms of Eczema with Impetigo, Sycosis, Erysipelas, Psoriasis, Tinea Circinata, Herpes Zoster and Scabies.

The chapters on Acne, Tinea, Impetigo and Dermatitis Venenata are very comprehensive and to the point. The special therapeutic agents, such as X-ray, Finsen Light, Carbon Dioxid, Liquid Air, the use of Vaccines and Bacterins, and Foreign Protein Infections are well discussed, but no attempt is made to teach the reader the details of their application, for which I think the author should be commended.

The chapter on syphilis gives a very modern, practical and conservative view on the diagnosis, prognosis and treatment. However, in the chapter on Dermatitis Medieamentosa, under the discussion of the arsenical eruptions, no specific mention is made of the salvarsan dermatoses.

The illustrations are modern, well selected and add very much in making a little book of three hundred pages such a valuable text for reference and study.

M. T. Van Studdiford, M. D.

Insanity and Law: A Treatise on Forensic Psychiatry. By H. Douglas Singer, M. D., M.R.C.P. (London), and William O. Krohn, A. M., M. D., Ph. D. Philadelphia. P. Blakiston's Son & Co. 1925.

In view of the recent series of sensational murder trials in the Illinois criminal courts and of the activity and industry of Chicago's gunmen and bandits, it seems appropriate that a good, reliable book on forensic psychiatry should emanate from the Windy City where the doctors are so successful in saving the murderers.

The work is divided into two parts: Part I, Mental Disorders, and Part II, Legal Aspects. It only contains about five hundred pages but a great deal of valuable information that might require a large amount of reference work is contained in them. Part II will be most helpful to physicians when called upon for advice on medico-legal subjects bearing on insanity, as they frequently are confronted with such problems. Among the topics discussed may be mentioned guardianship and insanity and marriage. One chapter is devoted to the physician in court. The perusal of it should put a physician at ease, when called upon to give medical testimony.

Francis M. Munson, M. D.

Abt's Pediatrics: Vols. V, VI and VII. W. B. Saunders Co. 1924 and 1925.

Volume V of this excellent work covers the diseases of the face and jaws; orthopedic surgery; tuberculosis; hereditary syphilis; the infectious disease and infection and immunity. The contributors are all men recognized for their special knowledge of the subject upon which they have written. The bibliography is unusually complete.

Volume VI takes up the physiology of the body temperature and its regulation, infectious diseases continued; local and general anesthesia; the peculiarities of surgery in childhood; fetal malformations; vulvovaginitis and arthritis deformans. This volume is thoroughly up to the minute, and of especial interest is the chapter on Scarlet Fever, with discussion of the important work of the Dicks, the application of the Dick Test, and the use of the scarlatinal antistreptococcus serum.

Volume VII comprises chapters on the physiology of the nervous system; surgery of the head and spine; the brain and spinal cord; diseases of the nervous system; psychopathology of the child; defects of speech and the sexual life of the child. It would be difficult to find in one volume a broader, more comprehensive and thorough discussion of the subjects treated in this work by men of recognized prominence.

L. von Meysenbug, M. D.

Consultations du Medicin-Praticien: Guide de Pratique Medico-Chirurgicale Journaliere. Par Le Dr. Fred. Blanchod. Paris. Libraire J. B. Bailliere et Fis. 19 Rue Hautefeuille. 1925.

This rather ambitious manual, published in French, is intended as a handbook of treatment, medical and surgical, for the busy practitioner. It takes up, alphabetically, all the infirmities to which the human organism is heir and gives the most approved treatment to them. To the extent to which such a feat can be performed in 560 pages, the book is authentic and will doubtless prove useful as a desk reference book for busy medical men having a working knowledge of the French language.

Francis M. Munson, M. D.

Operative Surgery: By J. Shelton Horsley, M. D., F.A.C.S. With 666 original illustrations. Second Edition. C. V. Mosby Company, St. Louis. 1924.

Covered in one volume, we have in this book an excellent survey of general surgery. From beginning to end the work shows evidence of careful forethought and planning. The headings under which the various topics are presented have been carefully selected, and as a result the author has been able to prepare a volume that is pleasing, particularly to the general practitioner, and especially for him who includes a certain amount of surgery in his practice.

To begin with, the author gives us an excellent idea under the heading of general considerations, where, in a relatively concise space, he presents the various important elements that come under this subject. While all topics have been excellently handled, his surgery of the blood vessels and of the gastro-intestinal tract are particularly interesting and presented in a simple and masterly manner.

The element that is one of the brightest features of the book is the illustrations. These are quite abundant, carefully arranged, and excellent drawn; and doubles the value of the book.

Frank L. Loria, M. D.

Practical Clinical Psychiatry for Students and Practitioners: By Edward A. Strecker, A. M., M. D. Illustrated. Philadelphia. P. Blakiston's Son & Co. 1925.

Doctors Strecker and Ebaugh have produced a convenient little book that is well named "Practical Clinical Psychiatry." It is very practical and the subject is presented by the case system. It is not intended for the psychiatric specialist but for the novice that he may learn the fundamentals of this important branch of medicine, and for the busy practitioner that may obtain the psychiatric point of view, which will help him out of many a tight place. The nurse, whether she be engaged in bedside, district, or school nursing, may gain an insight into the principles of psychiatry from it that will be of great value to her in the practice of her profession. The same applies to the social worker.

The book contains twelve chapters and a glossary. The first chapter is devoted to general etiology, diagnosis, prognosis and treatment; the second to the classification of mental diseases. The classification used by the authors is the one commonly employed by psychiatrists, and is in use in all mental hospitals. The last chapter discusses mental deficiency. The arrangement of the book and use of bold-faced type and small capitals for section and chapter headings makes it handy for reference.

Francis M. Munson, M. D.

PUBLICATIONS RECEIVED.

Lea & Febiger, Philadelphia and New York: "Modern Medicine," edited by Sir William Osler, Bart., M. D., F.R.S., Third Edition, re-edited by Thomas McCrae, M. D., Volume 1. "Surgery of Pulmonary Tuberculosis," by Alexander, M. D. "Diseases of the Nose, Throat and Ear, Medical and Surgical," by W. L. Ballenger, M. D., Fifth Edition.

C. V. Mosby Company, St. Louis: "Physiological Chemistry," by C. J. V. Pettibone, Ph. D. "Objective Psychopathology," by G. V. Hamilton, M. D.

W. B. Saunders Company, Philadelphia and London: "The Art of Medical Treatment," by Francis W. Palfrey, M. D.

F. A. Davis Company, Philadelphia: "Feeding and the Nutritional Disorders in Infancy and Childhood," by Julius H. Hess, M. D.

Fleming H. Revell Company, New York and Chicago: "The Faith, The Falsity and The Failure of Christian Science," by Woodbridge Riley, Ph. D., Frederick W. Peabody, LL.B., and Charles E. Humiston, M. D., Sc. D.

Miscellaneous: "Development of our Knowledge of Tuberculosis," by Lawrence F. Flick, M. D., LL.D.